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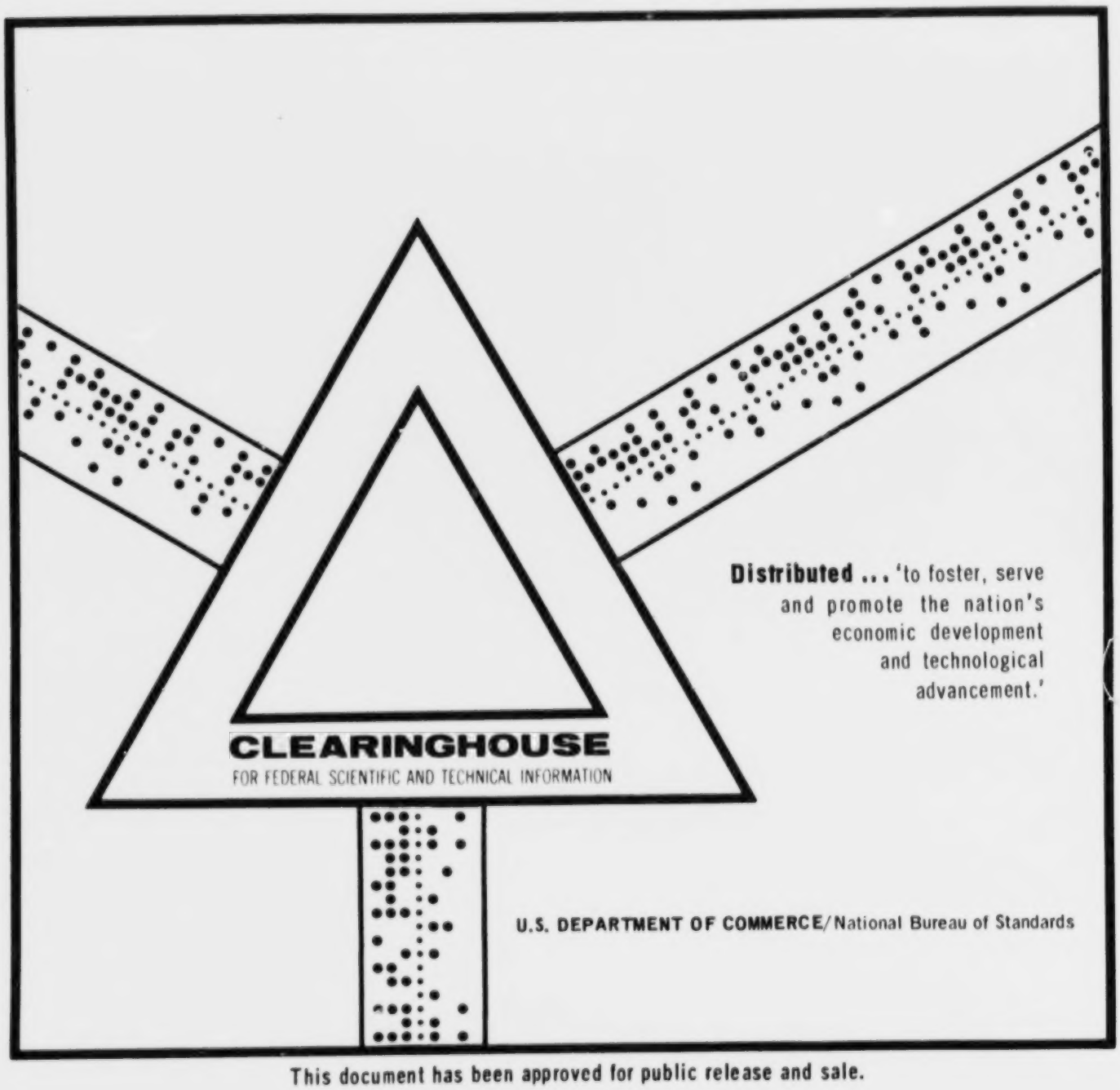
REPORT OF STATE AND LOCAL RADIOLOGICAL HEALTH PROGRAMS, FISCAL YEAR 1968

Bureau of Radiological Health
Rockville, Maryland

July 1969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FISCAL YEAR 1968

Report of State and Local Radiological Health Programs

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U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Public Health Service
Consumer Protection and Environmental Health Service
Environmental Control Administration

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FISCAL YEAR 1968

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JULY 1969

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Bureau of Radiological Health
Rockville, Maryland 20852

ACKNOWLEDGMENT

Our sincere appreciation is extended to the many individuals contributing to this report. In particular, special thanks are due to the State and local health agencies for providing the basic data and the Regional Radiological Health Representatives, Environmental Control Administration, for their help in collecting these data.

James W. Miller, D.D.S.
Assistant Director for
Regional Operations
Office of Field Operations
Bureau of Radiological Health

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REPORT OF STATE AND LOCAL RADIOLOGICAL HEALTH PROGRAMS
Fiscal Year 1968

INTRODUCTION

This report is the eighth of a series based on data collected during fiscal year reviews of State and local radiological health programs. The reviews are a joint effort of radiological health personnel in State health agencies, several local agencies and the regional offices of the Department of Health, Education, and Welfare. The resources and activities of State and local radiological health programs are presented and summarized from data collected as of June 30, 1968. Summary data are included for fiscal years 1963 through 1968.

Some degree of variation from State to State in radiological health programs is apparent due to the number, types, and location of radiation sources, the density of the population, and the levels of actual or potential radiation exposure.

Resources for radiological health activities include personnel, funds, and equipment. Program activity areas are defined as: 1) basic planning and administration, 2) X-ray survey and control, 3) environmental surveillance, 4) radioactive materials, 5) electronic products, 6) other radiological health activities. Data on electronic products are shown for the first time this year. Whenever possible, program activities have been categorized by these areas of activity to show the specific accomplishments during each of the last five fiscal years.

For the purpose of this report, Puerto Rico, the District of Columbia, and the Virgin Islands are counted as States. Fiscal Year 1968 data were not available from Connecticut as of the publication of this report; therefore, Connecticut has been excluded from most tables. In addition New Hampshire was unable to provide data on program activities.

RADIATION PROTECTION LEGISLATION AND REGULATIONS

Specific radiation protection laws have been adopted in 47 States, including Puerto Rico (exclusive of workmen's compensation and civil defense aspects) (table 2). Registration of radiation sources is authorized in all States except Iowa.

Licenses are issued in 19 States which have entered into an agreement with the Atomic Energy Commission for regulating specific material previously under AEC control (table 3). In addition, three States (Illinois, Massachusetts, Pennsylvania) have adopted legislation for the registration of laser devices, and two States (Louisiana and Mississippi) have specific authorization to regulate all sources of non-ionizing electronic product radiation (table 1). Twenty-five States have comprehensive regulations for the control of sources of ionizing radiation and 16 States have limited regulations.

Table 1.--States Having Specific Statutes for Control of Non-Ionizing Radiation, as of March 1, 1969

State	All Electromagnetic Radiation	Lazers Only	Effective Date of Act
Illinois		SB 984	8/11/67
Louisiana	HB 1165		7/31/68
Massachusetts		Ch. #560 SB 1148	10/9/68
Pennsylvania		Ch. #4 Act 436	9/1/68
Mississippi*			

*Attorney General has ruled that the present Radiation Control Act provides authority to control non-ionizing radiation.

Table 2. - Enabling Acts for Radiation Protection Regulations by State, as of March 1, 1969

State	Act/Year	Effective Date of Act (Month, Day, Year)	Responsible Agency or Remarks*
Alabama	Act 582/63	9/16/63	
Alaska	Chapter 66/57	3/18/57	
Arizona	Chapter 30/64	7/15/64	Ariz. Atomic Energy Comm.
Arkansas	Act 8/61	12/20/61	
California	Chapter 1711/61	7/1/62	
Colorado	Ch. 156/57; SB 231/65;	3/13/57; 4/23/65	
	as amended by SB 108;	6/1/67	
	as amended by SB 1	7/1/68	
Connecticut	Pub. Act 550/67	6/20/67	
Delaware	Chapter 74	4/26/68	
Florida	Chapter 290/61	2/21/62	
Georgia	Act 936/64; as amended by HB 864;	7/1/64; 4/3/68	
	as amended by HB 1586	4/8/68	
Hawaii	Chapter 18/51	5/2/51	
Idaho	Chapter 243/61	5/2/61	
Illinois	SB 515/59; as amended by SB 756/63	8/16/63	
Indiana	Ch. 77/59 as amended by Ch. 116/61	3/4/61	
Kansas	Chapter 290/63	7/1/63	
Kentucky	Sec. 152.120(1A), 152.125, and 152.190, Ky. Rev. Stat., as amended by SB 284/60	3/25/60	
Louisiana	Act 84/62 as amended by HB 1165	8/1/62; 7/31/68	La. Board Nuclear Energy
Maine	Chapter 403/61	3/2/62	
Maryland	Art. 43, as amended by Ch. 88/60,	6/1/60	
	as amended by SB 93	6/1/68	
Massachusetts	Chapter 633/60, Ch. 224/61;	11/28/60; 6/12/61	Massachusetts Department
	SB 1148	10/9/68	of Labor & Industries
Minnesota	Chapter 361/57	4/11/57	
Mississippi	HB 499/64	4/24/64	
Missouri	SB 322/63	10/13/63	
Montana	Chapter 108/67	7/1/67	
Nebraska	LB 19/63	10/19/63	
Nevada	AB 495/63	7/1/63	
New Hampshire	HB 597/63	7/2/63	
New Jersey	Chapter 116/58	7/8/58	
New Mexico	Chapter 185/59	6/12/59	
New York	Sec. 201 & 225, P.H. Law, as amended by Ch. 628/60 & SB 4570/66	4/18/60; 5/23/66	
North Carolina	Ch. 104-C, Gen. Stat., as amended by HB 34/63	6/26/63	
North Dakota	SB 202/65; Ch.446/65	7/1/65; 7/1/65	N.D. Water Conserv. Comm.
Ohio	HB 410/59	11/4/59	
Oklahoma	SB 26/63 as amended by HB 678/63	7/1/63; 6/18/63	
	HB 1020	4/22/68	
Oregon	Chapter 664/61	8/9/61	
Pennsylvania	Act 578/65 as amended by SB 320	1/28/66; 9/30/68	
Puerto Rico	Act 79/65 as amended by HB 462	7/1/65; 3/26/67	
South Carolina	Act 302/67	5/1/67	
South Dakota	SB 162/67	7/1/67	
Tennessee	Chapter 66/59	7/1/59	
Texas	Chapter 72/61	4/17/61	
Utah	HB 137/67	5/9/67	
Vermont	HB 59/67	7/1/67	
Virginia	Ch. 158/64; Ch. 314/68	3/3/67; 6/28/68	
Washington	Ch. 207/61, as amended by SB-15/65	6/30/61; 8/6/65	
Wisconsin	Ch. 325/63, as amended by Ch. 459/63	9/25/63; 1/4/64	
Wyoming	Chapter 153/55	2/19/55	Registration Statute

*Unless otherwise specified, statutes designate the State health department as the agency responsible for radiation protection with the authority to adopt regulations.

Table 3. - Permissive State Statutes for Federal-State Agreement of Certain Atomic Energy Commission-controlled Radioactive Materials, as of March 1, 1969

State	Act/Year	Effective Date of Act	Effective Date of Agreement
Alabama	Act 582/63	September 16, 1963	October 1, 1966
Alaska	*		
Arizona	Chapter 30/64	July 15, 1964	May 15, 1967
Arkansas	Act 8/61	December 20, 1961	July 1, 1963
California	Chapter 18/62	July 13, 1962	September 1, 1962
Colorado	SB-231/65	April 23, 1965	February 1, 1968
Connecticut	Pub. Act 550/67	June 26, 1967	
Delaware	Title 16, Chapter 74	April 26, 1968	
Florida	H-2367/61	June 16, 1961	July 1, 1964
Georgia	Act 936/64	July 1, 1964	
Hawaii	SB-63/67	February 28, 1967	
Idaho	SB-64/61	May 2, 1961	October 1, 1968
Illinois	SB-756/63	August 16, 1963	
Indiana	Chapter 116/61	March 4, 1961	
Kansas	Chapter 290/63	July 1, 1963	January 1, 1965
Kentucky	SB-284/60	March 25, 1960	March 26, 1962
Louisiana	Act 84/62	August 1, 1962	May 1, 1967
Maine	Chapter 403/61	March 2, 1962	
Maryland	Chapter 52/62	June 1, 1962	
Michigan	Pub. Act 54/65	June 18, 1965	
Mississippi	*		July 1, 1962
Montana	Chapter 108/67	July 1, 1967	
Nebraska	LB-19/63	October 19, 1963	October 1, 1966
Nevada	AB-495/63	July 1, 1963	
New Hampshire	HB-597/63	July 2, 1963	May 16, 1966
New Jersey	Chapter 124/61	December 4, 1961	
New Mexico	*		
New York	Chapter 314/60	March 29, 1960	October 15, 1962
North Carolina	SB-530/63	June 26, 1963	August 1, 1964
North Dakota	SB-202/65	July 1, 1965	
Ohio	HB-10/63	September 24, 1963	
Oklahoma	HB-678/63	June 18, 1963	
Oregon	Chapter 664/61	August 9, 1961	July 1, 1965
Pennsylvania	SB-295/65	January 28, 1966	
Puerto Rico	Act 79/65	July 1, 1965	
Rhode Island	SB-562/64	May 9, 1964	
South Carolina	Act 302/67	May 1, 1967	
South Dakota	SB-162/67	July 1, 1967	
Tennessee	Chapter 10/61	January 30, 1961	September 1, 1965
Texas	Chapter 72/61	April 17, 1961	March 1, 1963
Utah	HB-137/67	May 9, 1967	
Vermont	HB-59/67	July 1, 1967	
Virginia	Chapter 158/64	March 3, 1964	
Washington	Chapter 207/61 as amended by SB-15/65	March 20, 1961 August 6, 1965	December 31, 1966
Wisconsin	Chapter 264/63	August 25, 1963	

*Attorney General has ruled additional State laws are not necessary to conclude agreements.

RESOURCES

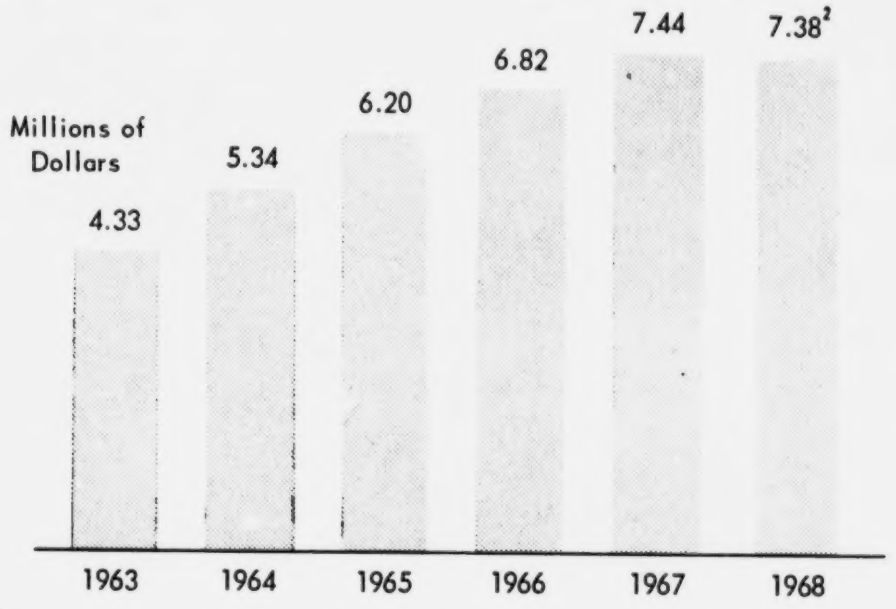
Expenditures

The funds available within a State for radiological health activities are either directly appropriated for that purpose, or may be allocated from an overall appropriation for several related types of health programs. Formula grant funds for radiological health activities were available to the States from the Public Health Service for fiscal year 1963 through fiscal year 1968. In 1968 State health agencies utilized Federal funds to support activities without categorical restrictions.

State and local health agencies spent $7,375,100 during fiscal year 1968 for radiological health activities. Per capita expenditures range from one cent to 11 cents among the 52 reporting States (table 4). The average per capita expenditure was 3.7 cents per State, the same as fiscal year 1967.

Expenditures for radiological health activities have increased 74.3 percent since 1963 (figure 1). However, in comparison with 1967 there has been no significant change. Total expenditures have stabilized, with an increase in only one program area--radioactive materials. Expenditures in this program area have increased each fiscal year since 1963 and expenditures in 1968 increased 13.5 percent over 1967.

Figure 1. Total Expenditures[1] for State and Local Radiological Health Activities, Fiscal Years 1963 to 1968



[1] Includes Federal funds [2] Excludes Connecticut

Table 4. - Total and Per Capita Expenditures for State and Local Radiological Health Activities by State, Fiscal Year 1968
(Includes Federal funds)

State	Population[a] 7/1/68 (In thousands)	Total Expenditures (In thousands)	Cents Per Capita
Total[b]	199,654.0	7,375.1	3.7
Alabama	3,566.0	102.5	2.9
Alaska	277.0	5.9	2.1
Arizona	1,670.0	36.2	2.2
Arkansas	2,012.0	161.6	8.0
California	19,221.0	963.8	5.0
Colorado	2,048.0	99.3	4.8
Connecticut[c]			
Delaware	534.0	31.5	5.9
District of Columbia	809.0	93.9	11.6
Florida	6,160.0	162.0	2.6
Georgia	4,588.0	130.8	2.9
Hawaii	778.0	39.6	5.1
Idaho	705.0	37.0	5.2
Illinois	10,974.0	235.3	2.1
Indiana	5,067.0	70.9	1.4
Iowa	2,748.0	36.6	1.3
Kansas	2,303.0	89.1	3.9
Kentucky	3,229.0	91.0	2.8
Louisiana	3,732.0	207.2	5.6
Maine	979.0	32.0	3.3
Maryland	3,757.0	135.9	3.6
Massachusetts	5,437.0	175.0	3.2
Michigan	8,740.0	154.0	1.8
Minnesota	3,646.0	64.7	1.8
Mississippi	2,342.0	50.6	2.2
Missouri	4,627.0	84.3	1.8
Montana	693.0	19.6	2.8
Nebraska	1,437.0	44.4	3.1
Nevada	453.0	8.0	1.8
New Hampshire	702.0	37.2	5.3
New Jersey	7,078.0	261.2	3.7
New Mexico	1,015.0	58.6	5.8
New York	18,113.0	2,002.4	11.1
North Carolina	5,135.0	106.9	2.1
North Dakota	625.0	34.9	5.6
Ohio	10,591.0	142.0	1.3
Oklahoma	2,518.0	36.4	1.4
Oregon	2,008.0	90.7	4.5
Pennsylvania	11,712.0	202.9	1.7
Rhode Island	913.0	64.3	7.0
South Carolina	2,692.0	46.3	1.7
South Dakota	657.0	18.1	2.8
Tennessee	3,976.0	59.8	1.5
Texas	10,972.0	328.5	3.0
Utah	1,034.0	68.1	6.6
Vermont	422.0	23.6	5.6
Virginia	4,597.0	60.4	1.3
Washington	3,276.0	118.3	3.6
West Virginia	1,805.0	35.9	2.0
Wisconsin	4,213.0	130.5	3.1
Wyoming	315.0	22.0	7.0
Puerto Rico	[d]2,697.0	61.7	2.3
Virgin Islands	[d]56.0	1.7	3.0

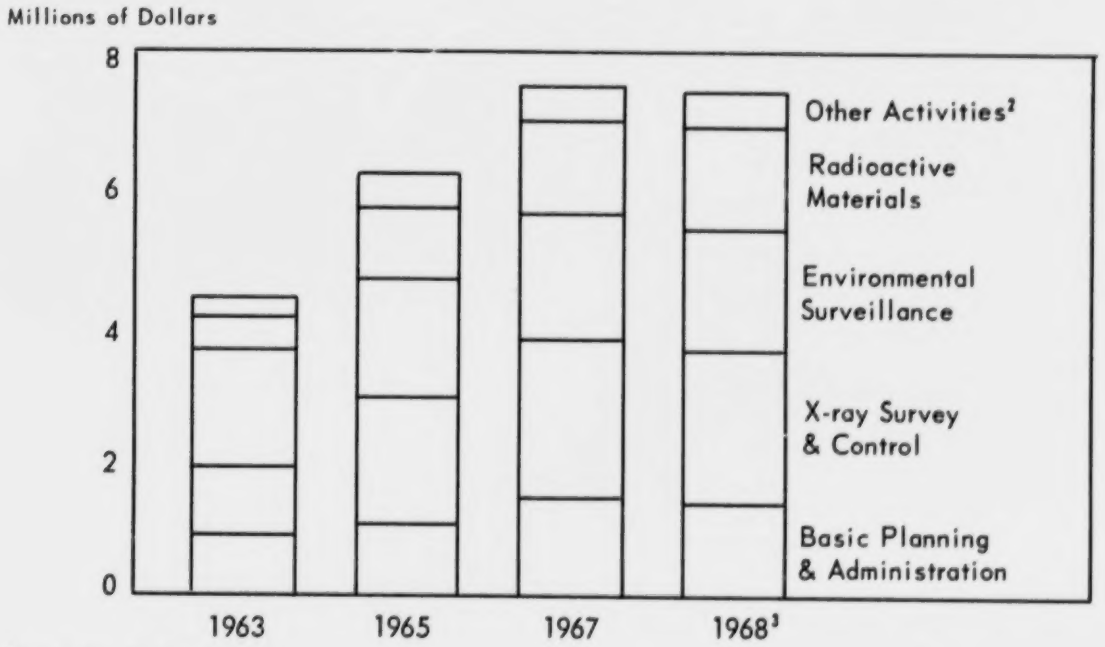
[a]Total resident population.
[b]Excludes Connecticut.
[c]No report received.
[d]Based on July 1967 data.

The two major areas of expenditures since 1963 have been X-ray survey and control and environmental surveillance (table 5). Since fiscal year 1965, a greater percentage of total funds has been spent in X-ray survey and control. Expenditures in this program area amounted to 30.9 percent of total funds in 1968 while 23.9 percent was expended on environmental surveillance.

Figure 2 shows the percent distribution of expenditures by program area for the fiscal years 1963, 1965, 1967, and 1968. For distribution of 1968 funds by program area and State, see appendix table 1, page 47. Data on expenditures for electronic products were collected for the first time in fiscal year 1968. Any expenditures in previous years for this category are included in "other radiological health activities," a catch-all category for activities such as research and studies which did not fit in the other program areas.

On a regional basis (see appendix C, "Definitions"), 38 percent of total expenditures for radiological health activities, or $2,798,600, was spent in fiscal year 1968 by the States in the Northeast region of the country (table 6); States in the southern region spent 25.8 percent; the West--21.2 percent, and the North Central Region--15.0 percent.

Figure 2. Total Expenditures[1] for State and Local Radiological Health Activities by Program Area and Selected Fiscal Years



[1] Includes Federal funds
[2] Includes electronic products
[3] Excludes Connecticut

Table 5.--Total Expenditures* for State and Local Radiological Health Activities by Program Area, Fiscal Years 1963 to 1968

Program Area	Fiscal Year 1963		Fiscal Year 1964		Fiscal Year 1965	
	Amount (thousands)	Percent of Total	Amount (thousands)	Percent of Total	Amount (thousands)	Percent of Total
Total	$4,328.1	100.0	$5,335.4	100.0	$6,202.2	100.0
Basic Planning and Administration	937.2	21.6	1,051.0	19.7	1,036.8	16.7
X-ray Survey and Control	946.1	21.9	1,381.5	25.9	1,839.4	29.7
Environmental Surveillance	1,757.1	40.6	1,729.1	32.4	1,781.5	28.7
Radioactive Materials	459.3	10.6	761.5	14.3	1,067.5	17.2
Other Radiological Health Activities	228.4	5.3	412.3	7.7	477.0	7.7

Program Area	Fiscal Year 1966		Fiscal Year 1967		Fiscal Year 1968	
	Amount (thousands)	Percent of Total	Amount (thousands)	Percent of Total	Amount (thousands)	Percent of Total
Total	$6,821.2	100.0	$7,442.1	100.0	[a]$7,375.1	100.0
Basic Planning and Administration	1,283.2	18.8	1,445.8	19.4	1,388.4	18.8
X-ray Survey and Control	2,269.3	33.3	2,364.3	31.8	2,278.7	30.9
Environmental Surveillance	1,652.4	24.2	1,860.5	25.0	1,763.2	23.9
Radioactive Materials	1,133.4	16.6	1,300.9	17.5	1,473.8	20.0
Electronic Products[b]					221.5	3.0
Other Radiological Health Activities	482.9	7.1	470.6	6.3	249.5	3.4

*Includes Federal funds.
[a]Excludes Connecticut.
[b]This category shown for the first time in FY 1968. In previous years, it was included in "other radiological health activities."

Table 6. - Total Expenditures* for State and Local Radiological Health Activities by Geographic Region, Fiscal Years 1967 and 1968
(thousands of dollars)

Region	1967		1968	
	Expenditure	Percent	Expenditure	Percent
United States	[a]$7,360.8	100.0	[a]$7,375.1	100.0
Northeast	2,665.2	36.2	2,798.6	38.0
North Central	1,199.3	16.3	1,104.8	15.0
South	1,970.7	26.8	1,904.6	25.8
West	1,525.6	20.7	1,567.1	21.2

*Includes Federal funds.

[a]Excludes Connecticut.

The average expenditure for all States in 1968 was $141,829 as compared with $140,417 in 1967 and $81,662 in 1963.

Eighteen States spent $100,000 or more for radiological health programs by the end of 1968 (table 7) as compared with 19 in 1967. Collectively, these 18 States spent an estimated $5,720,800 in fiscal year 1968 or approximately 77.6 percent of the total expenditures for the nation. These 18 States represent 68.7 percent of the total resident population. (Bureau of the Census July 1, 1968, provisional estimates of the total resident population.)

Table 7. - Distribution of the Number of States in Selected Expenditure Ranges* for State and Local Radiological Health Activities, Fiscal Years 1963 to 1968 (thousands of dollars)

Expenditure Range	FY 1963			FY 1964			FY 1965		
	Number of States	Expenditures		Number of States	Expenditures		Number of States	Expenditures	
		Amount (thousands)	Percent		Amount (thousands)	Percent		Amount (thousands)	Percent
Total	53	$4,328.1	100.0	53	$5,335.4	100.0	53	$6,202.2	100.0
Under $20.0	8	100.7	2.3	7	89.3	1.7	6	59.6	1.0
$20.0 - $39.9	13	389.2	9.0	13	382.1	7.2	13	391.8	6.3
$40.0 - $59.9	14	677.7	15.7	9	442.4	8.3	7	313.3	5.1
$60.0 - $79.9	7	468.0	10.8	9	636.0	11.9	8	584.6	9.4
$80.0 - $99.9	3	279.7	6.5	5	434.2	8.1	2	167.2	2.7
$100.0 - $199.9	5	708.1	16.4	5	675.1	12.6	12	1,714.9	27.6
$200.0 - $499.9	1	243.9	5.6	3	830.1	15.6	3	937.8	15.1
$500.0 & over	2	1,460.8	33.7	2	1,846.2	34.6	2	2,033.0	32.8

Expenditure Range	FY 1966			FY 1967			FY 1968		
	Number of States	Expenditures		Number of States	Expenditures		Number of States	Expenditures	
		Amount (thousands)	Percent		Amount (thousands)	Percent		Amount (thousands)	Percent
Total	53	$6,821.2	100.0	53	$7,442.1	100.0	[a]52	[a]$7,375.1	100.0
Under $20.0	5	48.4	0.7	3	16.6	0.2	5	53.3	0.7
$20.0 - $39.9	10	312.2	4.6	8	240.2	3.2	12	402.9	5.5
$40.0 - $59.9	9	437.7	6.4	13	616.1	8.3	5	259.7	3.5
$60.0 - $79.9	5	355.2	5.2	4	279.6	3.8	6	390.1	5.3
$80.0 - $99.9	3	257.6	3.8	6	519.3	7.0	6	548.3	7.4
$100.0 - $199.9	14	1,824.8	26.8	12	1,714.2	23.0	11	1,519.5	20.6
$200.0 - $499.9	5	1,379.1	20.2	5	1,267.7	17.0	5	1,235.1	16.7
$500.0 & over	2	2,206.2	32.3	2	2,788.4	37.5	2	2,966.2	40.3

*Includes Federal funds.

[a]Excludes Connecticut

Manpower

As of June 30, 1968, a total full-time equivalent of 439 professional and semiprofessional personnel (368 full-time and 387 part-time personnel) were working in State and local radiological health programs (table 8). The supply of professional and technical personnel continues to be far short of demand. Twenty-four States reported 50 budgeted and funded positions which were vacant at the end of fiscal year 1968.

Nine full-time professional Public Health Service personnel were assigned to State radiological health programs during fiscal year 1968. These personnel have not been included in any of the tables or figures.

Secretaries, clerks, and other nonprofessional personnel, who have not been included in tables or figures, contributed 125.5 man equivalents during the past fiscal year.

Figure 3 shows total man equivalence (see appendix C, "Definitions") at the end of each fiscal year since 1963. Total man equivalence has increased each year since 1963, with a 41 percent increase over the entire period. However, since 1965 man equivalence has remained at approximately the same level, with no significant change in 1968.

Figure 3. Total Man Equivalence for State and Local Radiological Health Activities, Fiscal Years 1963 to 1968

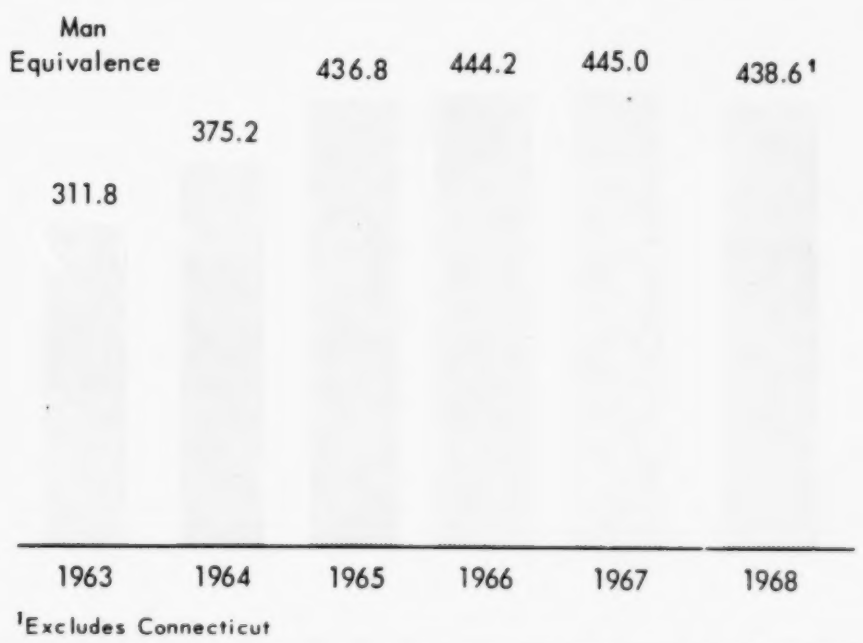


Table 8. - Number and Total Man Equivalence* of Radiological Health Personnel Employed by State and Local Health Agencies, Fiscal Years 1963 to 1968

Agencies by State	Number Employed by State and Local Agencies																	
	Fiscal Year 1963			Fiscal Year 1964			Fiscal Year 1965			Fiscal Year 1966			Fiscal Year 1967			Fiscal Year 1968		
	Full Time	Part Time	Total Man Equivalent	Full Time	Part Time	Total Man Equivalent	Full Time	Part Time	Total Man Equivalent	Full Time	Part Time	Total Man Equivalent	Full Time	Part Time	Total Man Equivalent	Full Time	Part Time	Total Man Equivalent
Total - All Agencies	244	367	311.8	297	439	375.2	3[illegible]	487	436.8	360	433	444.2	364	423	445.0	[a]368	[a]387	[a]438.6
State Health Departments	194	336	257.1	243	402	313.6	2[illegible]4	452	367.9	297	403	374.5	297	356	367.0	[a]299	[a]330	[a]359.2
Alabama	2	8	2.5	4	3	4.3	7	3	8.3	10	3	10.8	9	3	9.9	10	3	10.7
Alaska	-	1	0.1	-	1	0.1	-	1	0.1	-	1	0.1	-	-	-	-	-	-
Arizona	-	2	0.7	-	5	1.4	-	4	1.4	1	3	2.0	3	2	3.4	3	1	3.1
Arkansas	3	4	3.5	5	5	6.1	6	3	6.3	6	5	6.7	6	5	6.7	12	4	12.8
California	22	2	23.0	34	2	34.6	34	3	35.1	32	3	33.1	31	3	32.1	31	3	32.0
Colorado	2	8	4.3	-	7	2.1	2	12	4.9	5	6	6.3	6	5	7.0	6	8	7.5
Connecticut	3	7	4.7	6	7	7.5	6	8	7.7	6	8	7.7	7	8	8.7	(b)	(b)	(b)
Delaware	3	1	3.1	2	1	2.1	2	1	2.1	3	-	3.0	3	-	3.0	2	-	2.0
District of Columbia	-	6	1.8	1	3	2.2	3	3	3.5	3	1	3.1	4	1	4.1	4	1	4.1
Florida	10	8	12.0	11	8	13.0	14	14	17.7	14	17	17.7	12	21	16.6	10	18	13.7
Georgia	7	2	7.3	7	2	7.3	7	2	7.3	8	1	8.1	9	1	9.1	10	1	10.1
Hawaii	2	5	3.2	2	5	3.3	2	5	3.1	2	5	3.1	2	5	3.0	2	4	3.0
Idaho	-	8	1.4	1	12	2.3	1	11	2.7	1	11	2.0	1	19	2.7	2	19	3.7
Illinois	13	9	14.1	13	9	14.7	12	15	13.9	9	13	11.0	11	8	11.9	14	9	14.9
Indiana	3	4	3.7	4	7	5.0	5	31	6.8	5	5	5.8	4	6	4.5	4	5	4.5
Iowa	4	7	4.6	4	7	4.6	5	8	5.7	4	9	5.5	5	7	5.7	3	7	3.7
Kansas	1	8	4.2	3	9	5.9	4	9	6.7	3	5	4.3	2	6	3.6	4	6	5.6
Kentucky	5	-	5.0	7	-	7.0	6	-	6.0	7	-	7.0	7	-	7.0	7	-	7.0
Louisiana	1	7	2.7	1	9	3.3	2	11	5.4	6	10	9.2	6	-	6.0	6	-	6.0
Maine	2	4	3.3	3	4	4.3	3	4	4.3	3	3	4.0	2	3	3.0	1	4	1.8
Maryland	5	-	5.0	6	-	6.0	6	-	6.0	8	1	8.5	7	1	7.2	8	1	8.2
Massachusetts	6	13	8.3	6	11	9.0	7	13	9.7	7	13	9.7	8	12	10.5	8	12	10.5
Michigan	2	15	4.6	3	15	5.6	4	19	7.0	5	16	6.1	5	11	5.5	5	5	5.6
Minnesota	3	7	5.1	5	6	6.5	5	6	6.3	3	7	4.6	4	7	6.0	4	6	5.3
Mississippi	2	5	2.3	3	4	3.3	3	6	4.1	3	4	3.5	4	1	4.1	4	1	4.0
Missouri	2	9	4.1	5	7	5.9	6	7	6.9	6	7	6.9	4	7	5.0	4	7	5.0
Montana	1	4	1.4	1	5	1.4	1	5	1.4	-	4	0.4	-	5	0.2	-	4	0.3
Nebraska	1	5	1.9	1	5	2.2	3	3	3.2	3	2	3.1	4	2	4.1	3	2	3.1
Nevada	-	5	0.8	-	5	0.9	-	6	0.7	-	4	0.4	-	4	0.5	-	5	0.4
New Hampshire	-	10	1.6	1	9	3.1	1	5	2.5	2	3	2.8	2	2	2.6	3	2	3.4
New Jersey	17	-	17.0	16	-	16.0	16	-	16.0	18	-	18.0	15	-	15.0	14	-	14.0
New Mexico	2	7	3.6	2	6	3.5	3	6	4.4	3	8	5.5	4	10	6.0	1	11	3.6

Table 8. - (Continued)

New York	28	27	29.6	35	86	40.1	41	86	54.0	45	87	58.8	40	87	53.8	37	87	50.7
North Carolina	4	6	6.8	6	7	8.1	6	9	8.5	5	9	7.7	8	4	8.3	9	5	9.6
North Dakota	2	5	2.3	2	5	2.4	2	4	2.3	4	4	4.3	5	4	6.1	1	7	3.1
Ohio	3	3	3.3	3	4	3.7	3	10	5.4	3	19	6.7	3	17	8.6	4	24	9.4
Oklahoma	1	2	1.7	1	5	4.2	3	5	5.4	5	2	5.9	4	4	5.9	3	3	4.1
Oregon	5	5	6.3	4	4	5.1	6	2	6.3	6	3	6.6	6	1	6.0	6	1	6.0
Pennsylvania	7	48	10.8	7	48	11.7	11	50	16.2	10	49	15.1	9	12	11.4	11	1	11.5
Rhode Island	-	11	2.8	-	11	2.5	-	12	2.8	-	9	2.8	-	10	2.8	1	9	2.9
South Carolina	2	2	3.1	3	2	3.9	3	2	3.9	2	3	3.4	1	4	3.0	4	3	5.4
South Dakota	-	3	1.0	1	2	1.1	1	2	1.1	1	2	1.1	-	3	1.1	-	3	0.9
Tennessee	2	8	2.8	2	7	2.8	5	6	5.7	5	6	5.6	5	5	5.5	3	9	4.0
Texas	7	5	8.6	11	5	12.4	15	4	17.0	11	4	12.8	10	5	12.3	11	2	12.2
Utah	-	9	1.4	-	11	2.1	-	13	2.1	-	10	2.4	-	12	1.9	1	10	2.0
Vermont	1	3	1.5	-	3	0.5	-	3	0.6	-	3	0.7	1	2	1.8	1	2	1.8
Virginia	1	3	2.2	2	5	3.5	3	2	3.7	4	-	4.0	3	5	3.2	4	5	4.8
Washington	2	3	3.5	4	5	6.0	3	7	6.1	2	6	5.0	5	5	7.4	5	4	5.8
West Virginia	-	4	0.8	-	4	0.8	-	5	0.9	1	2	1.8	2	2	2.8	2	2	2.8
Wisconsin	1	5	2.6	1	5	2.5	3	2	4.0	3	3	4.5	3	4	3.7	5	-	5.0
Wyoming	-	1	0.8	-	2	1.3	-	2	1.3	-	2	0.9	-	2	1.0	-	2	1.2
Puerto Rico	4	1	4.2	4	1	4.3	3	1	3.3	4	1	4.3	5	2	5.6	6	1	6.3
Virgin Islands	-	1	0.1	-	1	0.1	-	1	0.1	-	1	0.1	-	1	0.1	-	1	0.1
Local Health Departments	44	25	47.8	43	31	49.8	48	26	53.7	46	25	52.3	45	34	52.5	47	28	52.8
Jefferson Co., Alabama	2	2	2.1	1	3	2.0	1	3	1.6	1	3	1.2	1	3	1.2	2	3	2.3
Alameda Co., California	2	-	2.0	2	-	2.0	2	-	2.0	2	-	2.0	2	-	2.0	2	-	2.0
Los Angeles Co., California	5	-	5.0	5	-	5.0	8	-	8.0	7	-	7.0	7	-	7.0	8	-	8.0
Orange Co., California	2	-	2.0	2	-	2.0	2	-	2.0	2	-	2.0	2	-	2.0	2	-	2.0
Vernon (City), California	1	-	1.0	1	-	1.0	-	1	0.5	-	1	0.5	1	-	1.0	0	1	0.3
Denver Dept.of Hlth. & Hsps.	NA	NA	NA	NA	NA	NA	NA	NA	NA	1	1	1.5	1	2	1.3	(c)	(c)	(c)
Baltimore, Maryland	1	3	1.5	1	4	2.5	1	4	2.1	-	5	2.1	NA	NA	NA	(d)	(d)	(d)
Detroit, Michigan	1	14	2.4	1	14	2.4	1	4	1.3	1	5	2.0	1	15	3.6	1	15	3.0
New York, New York	26	-	26.0	25	2	26.0	29	-	29.0	28	-	28.0	28	-	28.0	27	-	27.0
Philadelphia, Pennsylvania	4	6	5.8	5	8	6.9	4	14	7.2	4	10	6.0	2	14	6.4	5	9	8.2
Other Agencies	6	6	6.9	11	6	11.8	14	9	15.2	17	5	17.4	22	33	25.5	22	29	26.6
Calif. Dept. of Ind. Rel.	NA	NA	NA	4	-	4.0	5	-	5.0	5	-	5.0	5	-	5.0	5	-	5.0
La. Environ. Surveil. Prog.	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2	10	4.9	2	12	5.2
Mass. Dept. of Labor & Ind.	NA	NA	NA	NA	NA	NA	1	4	1.7	NA	NA	NA	NA	NA	NA	NA	NA	NA
N.Y. Bur. of X-ray Technology	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3	18	3.3	4	12	5.0
N.Y. State Dept. of Labor	6	6	6.9	7	6	7.8	8	5	8.5	12	5	12.4	12	5	12.3	11	5	11.4

*Excludes Public Health Service Personnel on loan to States. NA Not available. - Represents zero

[a]Excludes Connecticut.

[b]No report received.

[c]Included with Colorado.

[d]Included with Maryland.

Thirty-three percent of all radiological health workers are concentrated in the Northeast Region of the nation, with 30.9 percent in the South, 19.6 in the West, and 15.8 in the North Central States (table 9). The South is the only region which increased in man equivalence in 1968, with a 7 percent increase over 1967.

Table 9. - Total Man Equivalence* for State and Local Radiological Health Activities by Geographic Region, Fiscal Years 1967 and 1968

Region	1967		1968	
	Man Equivalence	Percent	Man Equivalence	Percent
United States	[a]436.3	100.0	[a]438.6	100.0
Northeast	150.9	34.6	148.2	33.7
North Central	69.4	15.9	69.1	15.8
South	126.5	29.0	135.4	30.9
West	89.5	20.5	85.9	19.6

*Excludes PHS personnel on loan to States.

[a]Excludes Connecticut.

In fiscal year 1963, there were 15 States with less than 2 people working in radiological health programs; by fiscal year 1968 there were only 8 States in this range. In 1963, there were 6 States with 10 or more people working in radiological health, but by fiscal year 1968, 12 States, representing 51 percent of the nation's population employed 10 or more persons and contributed 62.8 percent of the total man power in radiological health programs (table 10).

The median in the 52 States in fiscal year 1968 was the equivalent of approximately 4.8 p e cple as compared with a median of 5.6 in 1967.

The general levels of responsibility of personnel involved in radiological health activities are denoted by the following categories: program administrator, radiological health director, radiological health specialist, radiological health technician, and supporting personnel (see appendix C, "Definitions"). Of the 368 full-time radiological health workers in health departments in 1968, 42 were classified as radiological health directors, 254 were radiological health specialists and 72 were radiological health technicians (table 11).

Directors, who may administer the total radiological health program, can be defined as personnel with moderate to wide experience in public health

Table 10. - Distribution of the Number of States in Selected Man-equivalent Ranges*, Fiscal Years 1963 to 1968

Ranges of Man Equivalence	Fiscal Year 1963			Fiscal Year 1964			Fiscal Year 1965		
	Number of States	Personnel		Number of States	Personnel		Number of States	Personnel	
		Man Equiv.	Percent of Total		Man Equiv.	Percent of Total		Man Equiv.	Percent of Total
Total	53	311.8	100.0	53	375.2	100.0	53	436.8	100.0
Under 2.0	15	17.0	5.4	9	7.6	2.0	9	7.6	1.7
2.0 - 3.9	16	48.0	15.4	18	50.8	13.5	12	35.2	8.1
4.0 - 5.9	9	40.8	13.1	8	39.3	10.5	10	49.3	11.3
6.0 - 7.9	5	33.9	10.9	7	46.7	12.4	10	66.4	15.2
8.0 - 9.9	2	16.9	5.4	4	33.6	9.0	4	34.8	8.0
10.0 & over	6	155.2	49.8	7	197.2	52.6	8	243.5	55.7

Ranges of Man Equivalence	Fiscal Year 1966			Fiscal Year 1967			Fiscal Year 1968		
	Number of States	Personnel		Number of States	Personnel		Number of States	Personnel	
		Man Equiv.	Percent of Total		Man Equiv.	Percent of Total		Man Equiv.	Percent of Total
Total	53	444.2	100.0	53	445.0	100.0	[a]52	[a]438.6	100.0
Under 2.0	8	5.5	1.2	8	6.6	1.5	8	6.5	1.5
2.0 - 3.9	11	31.2	7.0	12	36.8	8.3	12	36.4	8.3
4.0 - 5.9	13	63.3	14.3	9	44.5	10.0	12	57.6	13.1
6.0 - 7.9	8	57.1	12.9	8	52.4	11.8	4	26.8	6.1
8.0 - 9.9	4	35.1	7.9	6	52.1	11.7	4	35.8	8.2
10.0 & over	9	252.0	56.7	10	252.6	56.7	12	275.5	62.8

*Excludes Public Health Service personnel on loan to States. [a]Excludes Connecticut

Table 11.--Distribution of State and Local Radiological Health Personnel* by Personnel Category, Fiscal Years 1963 to 1968

Personnel Categories	Fiscal Year 1963			Fiscal Year 1964			Fiscal Year 1965		
	Total	Full Time	Part Time	Total	Full Time	Part Time	Total	Full Time	Part Time
Total	611	244	367	736	297	439	833	346	487
Program Administrators	84	-	84	82	-	82	78	-	78
Radiological Health Directors	49	27	22	55	34	21	61	37	24
Radiological Health Specialists	177	160	17	223	197	26	272	244	28
Radiological Health Technicians	62	57	5	71	66	5	71	65	6
Supporting Personnel	239	-	239	305	-	305	351	-	351

Personnel Categories	Fiscal Year 1966			Fiscal Year 1967			Fiscal Year 1968		
	Total	Full Time	Part Time	Total	Full Time	Part Time	Total	Full Time	Part Time
Total	793	360	433	787	364	423	[a]755	368	387
Program Administrators	69	-	69	75	-	75	72	-	72
Radiological Health Directors	64	41	23	60	41	19	57	42	15
Radiological Health Specialists	287	253	34	286	258	28	271	254	17
Radiological Health Technicians	72	66	6	73	65	8	80	72	8
Supporting Personnel	301	-	301	293	-	293	275	-	275

*Excludes Public Health Service personnel on loan to States. - Represents zero.
[a]Excludes Connecticut

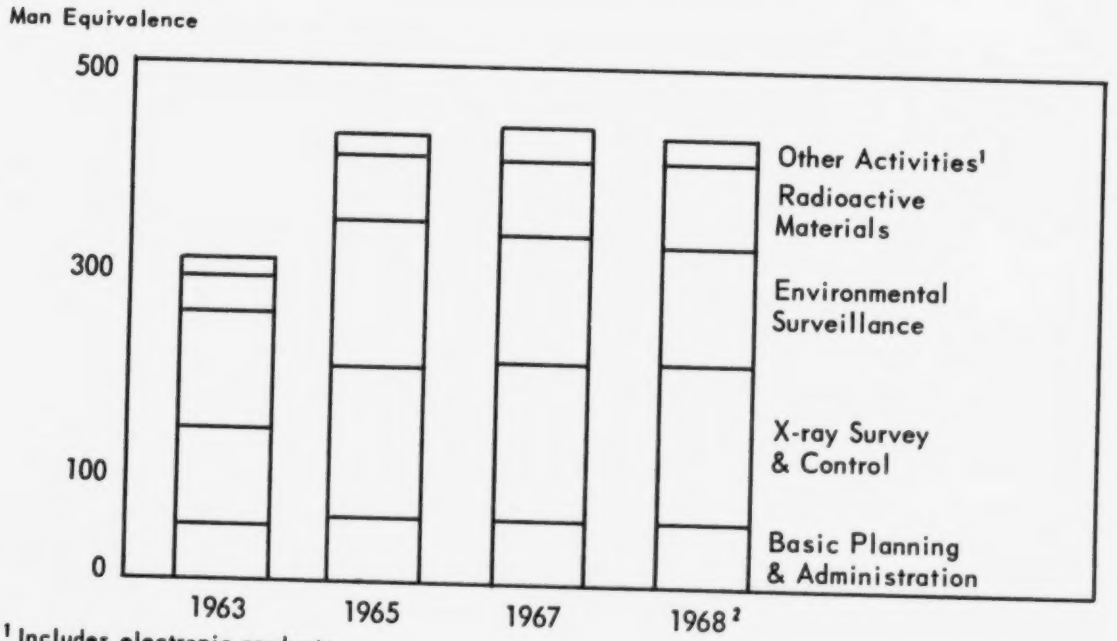
programming with a physical science, biological or engineering degree--many with master's or doctorate degrees. Specialists may direct one or more program areas and also hold degrees in engineering, biological or physical sciences. Technicians are personnel who have high school degrees and may have additional college or technical courses in radiological or related health activities.

The number of full-time radiological health directors has increased 5 percent over 1967; radiological health specialists had no change, but radiological health technicians increased 14 percent. For distribution of personnel by category and State for fiscal year 1968, see appendix table 2.

Table 12 shows radiological health personnel man equivalence by program area for fiscal years 1963 through 1968. During fiscal year 1968, 35 percent of all personnel were working in X-ray Survey and Control, 26 percent in Environmental Surveillance, 18 percent in Radioactive Materials, 14 percent in Basic Planning and Administration, 1 percent in Electronic Products and 5 percent in other radiological health activities. Electronic Products is a new category and specific data were gathered on this program area for the first time in fiscal year 1968.

Appendix table 3 presents man equivalence by program area and State for fiscal year 1968. Figure 4 shows total man equivalence by program areas for selected fiscal years.

Figure 4. Total Man Equivalence for State and Local Radiological Health Activities by Program Area and Selected Fiscal Years



[1] Includes electronic products
[2] Excludes Connecticut

Table 12.--Radiological Health Personnel* Man Equivalence by Program Area, Fiscal Years 1963 to 1968

Program Area	Fiscal Year 1963			Fiscal Year 1964			Fiscal Year 1965		
	Total	Full Time	Part Time	Total	Full Time	Part Time	Total	Full Time	Part Time
Total	311.8	244.0	67.8	375.2	297.0	78.2	436.8	346.0	90.8
Basic Planning and Administration	54.6	29.2	25.4	58.2	32.1	26.1	62.4	37.4	25.0
X-ray Survey and Control	92.3	79.5	12.8	118.6	100.2	18.4	143.1	116.4	26.7
Environmental Surveillance	111.2	89.3	21.9	127.1	102.7	24.4	143.3	115.5	27.8
Radioactive Materials	33.9	30.2	3.7	51.5	45.4	6.1	65.0	57.8	7.2
Other Radiological Health Activities	19.8	15.8	4.0	19.8	16.6	3.2	23.0	18.9	4.1

Program Area	Fiscal Year 1966			Fiscal Year 1967			Fiscal Year 1968		
	Total	Full Time	Part Time	Total	Full Time	Part Time	Total	Full Time	Part Time
Total	444.2	360.3	83.9	445.0	364.0	81.0	[a]438.6	368.0	70.6
Basic Planning and Administration	60.9	39.1	21.8	62.0	41.6	20.4	63.4	46.4	17.0
X-ray Survey and Control	155.5	131.1	24.4	151.2	126.9	24.3	155.3	133.1	22.2
Environmental Surveillance	135.4	107.7	27.7	128.6	101.9	26.7	112.2	91.8	20.4
Radioactive Materials	68.6	60.5	8.1	72.0	66.4	5.6	80.5	74.9	5.6
Electronic Products[b]							5.6	4.7	0.9
Other Radiological Health Activities	23.8	21.9	1.9	31.2	27.2	4.0	21.6	17.1	4.5

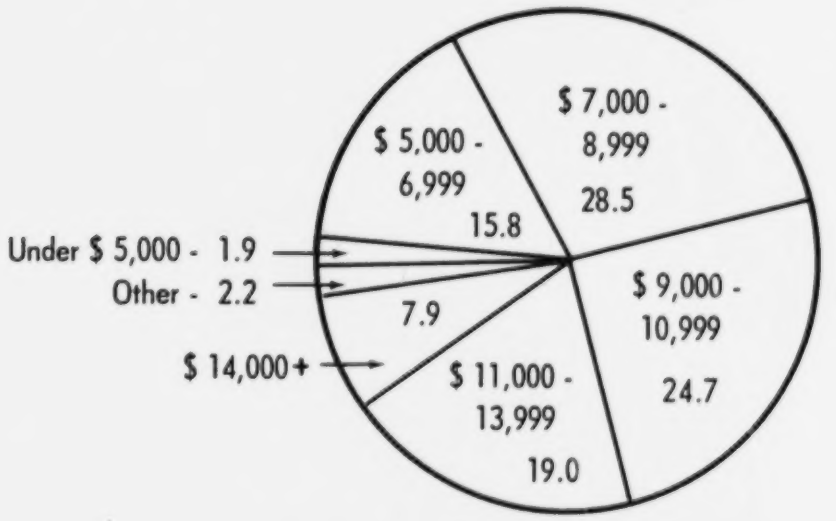
*Excludes Public Health Service personnel on loan to the States.

[a]Excludes Connecticut.

[b]This category shown for the first time in FY 1968. In previous fiscal years, it was included in "other radiological health activities."

Fifty-three percent of full-time radiological health personnel were earning between $7,000 and $11,000 in fiscal year 1968, 27 percent earned more than $11,000, and 18 percent earned less than $7,000. Contractual employees, consultants and persons for whom salaries were not given make up the remaining 2 percent (Figure 5).

Figure 5. Percent Distribution of Full-time State and Local Radiological Health Personnel by Salary Range, Fiscal Year 1968



Ninety percent of full-time radiological health directors earned $11,000 or more while 67 percent of specialists earned between $7,000 and $11,000. Sixty percent of full-time technicians earned between $5,000 and $6,999 (table 13).

Seventy-two percent of the personnel located in the western region of the United States earned more than $9,000; 59.6 percent in the North Central, 49.6 in the Northeast, and 37.8 percent in the South.

Forty-five percent of personnel earning $14,000 or more are located in the Northeast (table 14).

Appendix tables 4 through 9 give the distribution by State of all personnel for each salary range for fiscal year 1968.

Table 13.--Number and Percent Distribution of Radiological Health Personnel* by Personnel Category and Salary Range, Fiscal Year 1968

Salary Range	All Personnel		Program Administrators		Radiological Health Directors		Radiological Health Specialists		Radiological Health Technicians		Supporting Personnel	
	Total	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Full Time	[a]368	100.0	-	...	42	100.0	254	100.0	72	100.0	-	...
Under $5,000	7	1.9	-	...	-	...	3	1.2	4	5.6	-	...
$5,000 - $6,999	58	15.8	-	...	1	2.4	14	5.5	43	59.6	-	...
$7,000 - $8,999	105	28.5	-	...	-	...	84	33.1	21	29.2	-	...
$9,000 - $10,999	91	24.7	-	...	3	7.1	86	33.8	2	2.8	-	...
$11,000 - $13,999	70	19.0	-	...	19	45.2	51	20.1	-	...	-	...
$14,000 & over	29	7.9	-	...	19	45.3	10	3.9	-	...	-	...
Other[b]	8	2.2	-	...	-	...	6	2.4	2	2.8	-	...
Part Time	[a]387	100.0	72	100.0	15	100.0	17	100.0	8	100.0	275	100.0
Under $5,000	6	1.6	-	...	-	...	-	...	3	37.5	3	1.1
$5,000 - $6,999	13	3.4	-	...	-	...	1	5.9	3	37.5	9	3.3
$7,000 - $8,999	37	9.6	1	1.4	-	...	4	23.5	-	...	32	11.6
$9,000 - $10,999	43	11.1	1	1.4	3	20.0	2	11.8	-	...	37	13.5
$11,000 - $13,999	62	16.0	11	15.3	8	53.3	5	29.4	-	...	38	13.8
$14,000 & over	84	21.7	57	79.1	4	26.7	3	17.6	-	...	20	7.3
Other[b]	142	36.6	2	2.8	-	...	2	11.8	2	25.0	136	49.4

*Excludes Public Health Service personnel on loan to States
[a]Excludes Connecticut.

- Represents zero.
[b]Includes personnel for whom salaries are unknown, contractural employees, and consultants.

Table 14.--Number and Percent Distribution of Radiological Health Personnel* by Salary Range and Geographic Region, Fiscal Year 1968

Geographic Region	All Personnel		Under $5,000		$5,000-$6,999		$7,000-$8,999		$9,000-$10,999		$11,000-$13,999		$14,000 & over		Other[a]	
	Total	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Full Time	[b]368	100.0	7	100.0	58	100.0	105	100.0	91	100.0	70	100.0	29	100.0	8	100.0
Northeast	123	33.5	-	...	20	34.5	37	35.2	30	32.9	18	25.7	13	44.8	5	62.5
North Central	52	14.1	-	...	9	15.5	12	11.4	15	16.5	10	14.3	6	20.7	-	...
South	119	32.3	7	100.0	25	43.1	39	37.2	28	30.8	11	15.7	6	20.7	3	37.5
West	74	20.1	-	...	4	6.9	17	16.2	18	19.8	31	44.3	4	13.8	-	...
Part Time	[b]387	100.0	6	100.0	13	100.0	37	100.0	43	100.0	62	100.0	84	100.0	142	100.0
Northeast	143	36.9	-	...	3	23.0	6	16.2	5	11.6	13	21.0	17	20.2	99	69.7
North Central	96	24.8	3	50.0	1	7.7	3	8.1	7	16.3	24	38.7	35	41.8	23	16.2
South	75	19.4	2	33.3	3	23.1	8	21.6	10	23.3	16	25.8	16	19.0	20	14.1
West	73	18.9	1	16.7	6	46.2	20	54.1	21	48.8	9	14.5	16	19.0	-	...

*Excludes Public Health Service personnel on loan to the States.
[a]Includes personnel for whom salaries are unknown, contractural employees, and consultants.
- Represents zero.
[b]Excludes Connecticut.

Table 15.--Distribution of Full-time Radiological Health Directors* and Radiological Health Specialists* by Discipline, Fiscal Years 1963 to 1968

Discipline	Fiscal Year					
	1963	1964	1965	1966	1967	1968
Total	187	231	281	294	299	[a]296
Chemist	58	65	71	74	69	64
Physicist	35	41	60	74	86	90
Engineer	39	42	53	47	42	34
Sanitarian	24	27	41	34	31	26
Biologist	16	22	19	14	24	23
M.D.	1	4	5	4	4	3
D.D.S.	1	1	-	-	-	-
All Other	13	29	32	47	43	56

*Excludes Public Health Service personnel on loan to States.
- Represents zero.
[a] Excludes Connecticut.

The basic disciplines of full-time radiological health directors and radiological health specialists are shown for each State for fiscal year 1968 in Appendix Table 10. In fiscal year 1968, there were 42 full-time radiological health directors and 254 radiological health specialists (table 15), a total of 296 personnel in these 2 categories. The basic disciplines of the majority of these personnel are in physics, chemistry and engineering, and these disciplines accounted for 63.5 percent of the total for fiscal year 1968. Physics is the predominant discipline in 1968--in 1963 chemistry was the discipline of the majority of personnel.

Organizational titles, educational degrees and program work areas are shown in Appendix B for all personnel who spent 15 percent or more of their working time in radiological health.

Equipment

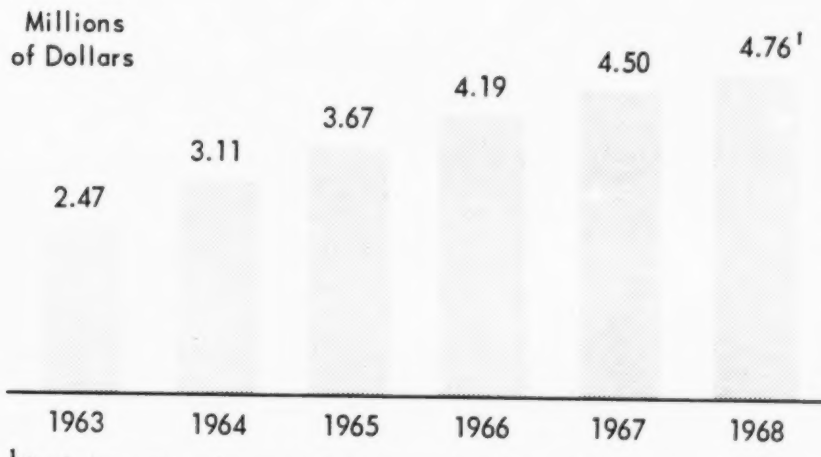
Although less money was spent in 1968 for new equipment, the cumulative value of laboratory and survey equipment increased to $4,756,800, a 5.5 gain over 1967 (figure 6). The value of equipment is tabulated on a cumulative basis and does not reflect depreciation costs.

By the end of fiscal year 1968, 19 States had equipment valued at $80,000 or more. The combined cost of equipment owned by these 19 States equaled $3,364,600 or approximately 71 percent of the total for all States (table 16). The median valuation of equipment was $64,600 in fiscal year 1968 as compared with $55,500 in 1967 and $10,000 at the end of 1962.

In 1968, an estimated $248,900 was spent on new equipment, a 20 percent decrease in comparison with 1967 (table 17 and figure 7). The majority of States spent less than $15,000 on new equipment. Twenty States reported expenditures of less than $5,000 and 15 States made no purchases. Only 4 States reported expenditures over $15,000.

Table 18 shows the number of specific types of laboratory and field equipment owned by State health agencies.

Figure 6. Cumulative Value of Equipment Purchased by State and Local Health Agencies for Radiological Health Activities, Fiscal Years 1963 to 1968



[1]Excludes value of new equipment purchased by Connecticut in 1968

Table 16.--Distribution of the Number of States by Selected Cost Ranges of Equipment,* Cumulative Value, for Radiological Health Activities Fiscal Years 1963 to 1968

Cost Ranges (thousands)	Available for Use 6/30/63			Available for Use 6/30/64			Available for Use 6/30/65		
	Number of States	Distribution of Equipment		Number of States	Distribution of Equipment		Number of States	Distribution of Equipment	
		Cumulative Cost (thousands)	Percent of Total		Cumulative Cost (thousands)	Percent of Total		Cumulative Cost (thousands)	Percent of Total
Total	53	$2,465.9	100.0	53	$3,110.6	100.0	53	$3,665.7	100.0
Under $20.0	26	274.1	11.1	19	241.3	7.8	15	176.3	4.8
$20.0-$39.9	7	233.1	9.4	8	221.3	7.1	11	325.8	8.9
$40.0-$59.9	9	467.8	19.0	10	489.9	15.8	7	356.8	9.8
$60.0-$79.9	5	331.0	13.4	8	573.6	18.4	7	492.3	13.4
$80.0-$99.9	1	90.5	3.7	3	270.5	8.7	5	430.0	11.7
$100.0 & over	5	1,069.4	43.4	5	1,314.0	42.2	8	1,884.5	51.4

Cost Ranges (thousands)	Available for Use 6/30/66			Available for Use 6/30/67			Available for Use 6/30/68		
	Number of States	Distribution of Equipment		Number of States	Distribution of Equipment		Number of States	Distribution of Equipment	
		Cumulative Cost (thousands)	Percent of Total		Cumulative Cost (thousands)	Percent of Total		Cumulative Cost (thousands)	Percent of Total
Total	53	$4,188.6	100.0	53	$4,507.9	100.0	53	[a]$4,756.8	100.0
Under $20.0	9	78.9	1.9	9	86.1	1.9	8	72.6	1.5
$20.0-$39.9	11	310.5	7.4	8	226.0	5.0	8	245.2	5.2
$40.0-$59.9	9	405.0	9.7	10	476.1	10.6	8	388.1	8.2
$60.0-$79.9	8	567.3	13.5	7	481.2	10.7	10	686.3	14.4
$80.0-$99.9	7	608.7	14.5	9	794.5	17.6	7	615.3	12.9
$100.0 & over	9	2,218.2	53.0	10	2,444.0	54.2	12	2,749.3	57.8

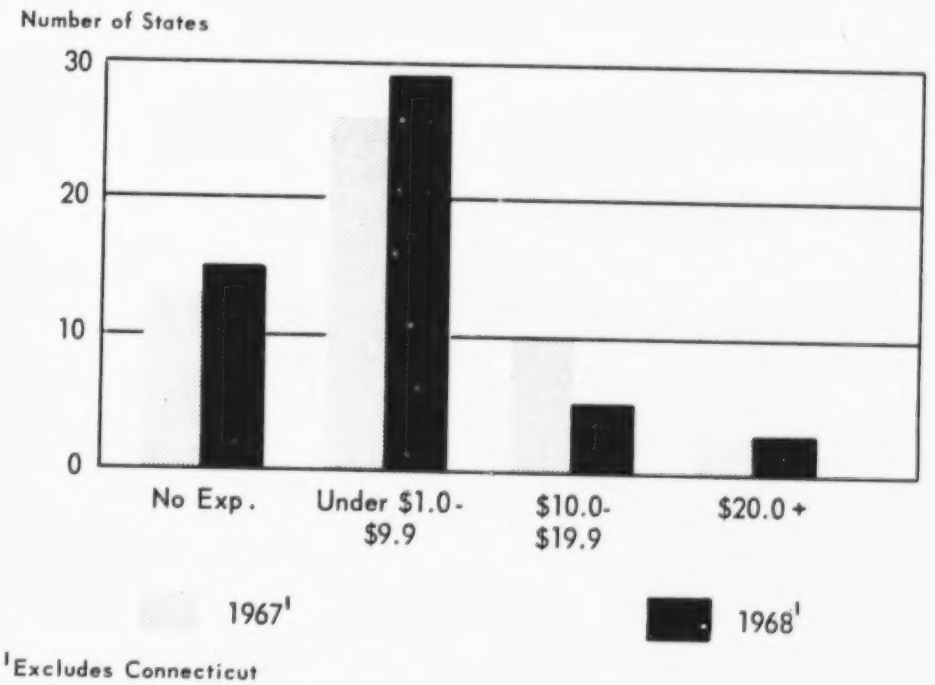
*Excludes Public Health Service equipment on loan to States.
[a]Excludes value of equipment purchased by Connecticut in Fiscal Year 1968.

Table 17.--Distribution of the Number of States by Selected Cost Ranges of New Laboratory and Field Survey Equipment* Purchased for Radiological Health Activities, Fiscal Years 1967 and 1968 (thousands of dollars)

Cost Ranges	1967			1968		
	Number of States	Total Cost	Percent of Total Cost	Number of States	Total	Percent of Total Cost
Total	[a]52	$319.3	100.0	[a]52	$248.9	100.0
No expenditure	13	-	-	15	-	-
Under $1.0	7	2.5	0.8	6	3.1	1.2
$1.0-$4.9	12	32.2	10.1	14	28.3	11.4
$5.0-$9.9	7	46.6	14.6	9	58.9	23.7
$10.0-$14.9	7	86.4	27.1	4	48.4	19.4
$15.0-$19.9	3	52.9	16.6	1	18.6	7.5
$20.0-$24.9	1	21.2	6.6	1	20.4	8.2
$25.0 & over	2	77.5	24.2	2	71.2	28.6

*Excludes Public Health Service equipment on loan to States.
[a]Excludes Connecticut.

Figure 7. Distribution of States by Selected Cost Ranges for Laboratory and Survey Equipment Purchased for Radiological Health Activities, Fiscal Years 1967 and 1968



[1]Excludes Connecticut

Table 18. - Number and Type of Equipment for State and Local Radiological Health Activities by State, Fiscal Year 1968*

State	Laboratory Instrumentation						Survey Instruments					
							Alpha		Beta-Gamma			Neutron
	Internal Proportional Counter	Low-Beta Counter	Multi-Channel Analyzer	Single-Channel Analyzer	Liquid Scintillation Analyzer	Thin-Window GM Counter	Gas Flow	Scintillation	Ion-Chamber	GM Counter	Scintillator	
Total[a]	94	57	66	27	14	38	93	85	517	457	54	50
State Health Departments	89	55	63	25	13	35	89	82	480	401	50	44
Alabama	2	1	1	1	-	-	2	2	4	2	1	-
Alaska	-	1	1	-	-	-	-	1	3	1	-	-
Arizona	1	-	-	-	-	-	1	1	4	3	1	1
Arkansas	1	1	1	-	-	1	4	2	4	3	-	1
California	5	2	2	1	1	-	10	1	85	46	4	7
Colorado	1	1	2	-	1	1	2	6	5	6	3	1
Connecticut[b]												
Delaware	2	-	1	1	-	1	-	1	4	5	-	-
District of Columbia	4	1	1	-	-	1	2	1	7	6	1	1
Florida	2	1	1	1	-	1	-	3	18	14	1	-
Georgia	2	1	2	1	-	1	5	2	12	11	-	1
Hawaii	2	1	1	1	-	-	1	1	2	6	-	-
Idaho	1	1	-	1	-	-	-	1	5	3	-	-
Illinois	3	1	1	-	-	1	4	1	22	24	2	1
Indiana	2	1	1	-	1	-	1	2	10	4	2	1
Iowa	4	2	1	-	1	1	1	1	4	-	-	1
Kansas	2	1	1	1	-	1	2	2	2	2	1	1
Kentucky	3	1	1	-	-	2	-	3	21	25	1	1
Louisiana	1	-	1	1	-	1	2	-	4	3	2	1
Maine	4	1	1	-	-	-	-	1	6	5	-	-
Maryland	1	1	1	1	-	1	1	1	5	2	1	-
Massachusetts	4	2	1	2	-	1	1	7	22	23	-	2
Michigan	2	1	1	-	-	1	2	1	25	4	2	2
Minnesota	1	1	2	-	-	-	-	2	5	3	-	-
Mississippi	1	-	-	-	-	-	2	-	3	1	3	1
Missouri	1	1	-	-	-	-	1	-	5	2	-	1
Montana	1	-	-	-	-	-	-	1	1	2	-	-
Nebraska	1	-	1	-	-	-	-	2	3	6	-	1
Nevada	1	-	-	1	1	1	-	-	2	1	-	-
New Hampshire	1	2	1	1	1	1	1	3	5	7	1	1

Table 18. - (Continued)

	Laboratory Instrumentation						Survey Instruments					
							Alpha		Beta-Gamma			
	Internal Proportional Counter	Low-Beta Counter	Multi-Channel Analyzer	Single-Channel Analyzer	Liquid Scintillation Analyzer	Thin-Window GM Counter	Gas Flow	Scintillation	Ion-Chamber	GM Counter	Scintillater	Neutron
New Jersey	3	2	4	1	1	1	3	1	12	11	2	1
New Mexico	1	-	-	-	-	-	1	3	4	2	1	1
New York	1	5	12	2	4	-	8	1	52	4	7	1
North Carolina	4	3	2	1	1	-	4	1	-	-	-	1
North Dakota	1	1	2	-	-	-	-	2	4	6	-	1
Ohio	3	1	1	-	-	-	2	1	12	3	2	-
Oklahoma	1	-	1	1	-	10	2	3	6	8	1	1
Oregon	1	1	1	2	-	1	1	-	6	4	-	-
Pennsylvania	1	2	1	-	-	3	9	6	15	16	9	3
Rhode Island	1	1	1	-	-	-	-	1	2	2	-	-
South Carolina	2	1	1	1	-	1	2	2	4	6	1	1
South Dakota	1	-	-	-	-	-	-	1	-	2	-	-
Tennessee	3	1	1	-	-	1	1	1	8	7	1	1
Texas	2	2	1	-	-	-	3	5	23	36	3	4
Utah	2	1	1	-	1	-	1	-	2	24	-	1
Vermont	-	1	1	-	-	-	-	1	3	2	-	1
Virginia	1	1	1	1	-	1	2	1	6	2	-	-
Washington	1	1	2	-	-	-	1	1	6	1	2	-
West Virginia	-	1	1	1	-	-	1	-	3	2	1	1
Wisconsin	2	1	1	-	-	-	2	1	5	1	-	-
Wyoming	1	1	-	-	-	-	1	-	2	2	1	-
Puerto Rico	1	1	1	1	-	-	-	1	5	2	-	-
Virgin Islands	-	-	-	-	-	-	-	-	2	1	-	-
Local Health Departments	1	1	1	2	-	1	2	1	22	35	3	2
Jefferson Co., Ala.	-	-	-	-	-	-	1	-	1	1	-	-
New York, New York	-	-	-	1	-	-	-	-	5	27	2	1
Philadelphia, Pa.	1	1	1	1	-	1	1	1	16	7	1	1
Other Agencies	4	1	0	-		2	2	2	15	10	1	4
La. Envir. Surv. Prog.	1	1	1	-	-	-	-	-	-	4	-	-
New York Dept. of Labor	3	-	1	-	1	2	2	2	15	17	1	4

*Excludes Public Health Service equipment on loan to States.
[a]Excludes Connecticut.

- Represents zero.
[b]No report received.

PROGRAM ACTIVITIES

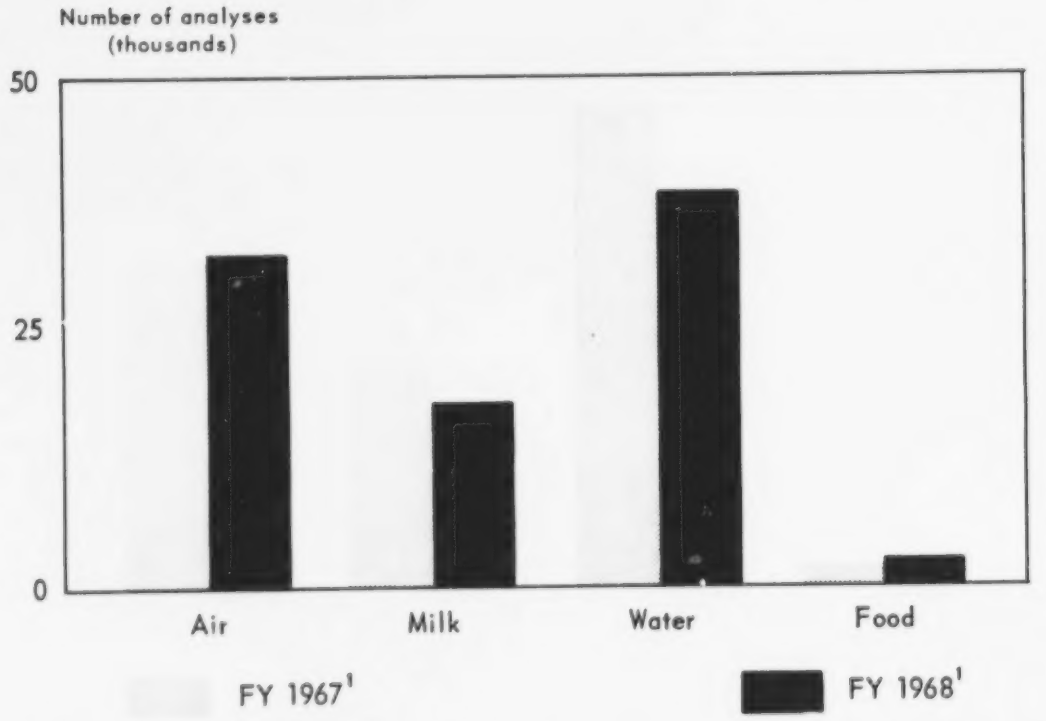
Environmental Surveillance

Environmental surveillance programs in most State health departments are concerned with surveillance around nuclear reactors and other nuclear facilities located in the States.

Surveillance of fallout resulting from atmospheric nuclear testing has not been emphasized in recent years; however, States have maintained a capability for environmental surveillance that is adequate not only for local sources such as reactors, but also for widespread fallout. Widespread fallout may result from atmospheric testing, from accidental releases of radioactivity from underground nuclear tests, from the uses of nuclear explosives for peaceful purposes, and from other sources.

Appendix tables 11 through 16 show the number of air, milk, water, food, smear tests, and miscellaneous analyses performed in State laboratories in Fiscal Year 1968. Figure 8 compares the total analyses of air, milk, water, and food with 1967.

Figure 8. Number of Analyses Performed in State Laboratories by Type of Sample, Fiscal Years 1967 and 1968



[1]Excludes Connecticut

X-Ray

Table 19 reports the types of compliance programs relating to the dental, medical, and industrial X-ray activities in each State.

Dental X-ray

In fiscal year 1968, 50 States reported an estimated total of 98,557 dental X-ray machines. Of this total, 81,280 machines (82.5%) were registered. Four percent of the total number of machines were registered within the fiscal year.

Of all dental machines, 81,892 (83.1%) have been inspected at least once. During fiscal year 1968, 16,682 (16.9%) machines were inspected. Seventy-one percent of the reported dental machines are in full compliance with State regulations, 2,683 (2.7%) having been brought into compliance this year. However, it should be noted that many States were unable to provide data on compliance activities (table 20).

Medical X-ray

Data were not available from all States on medical X-ray program activities. Forty-nine States reported 109,406 medical X-ray machines within their jurisdicitions. Of this total, 93,233 (85.2%) are registered, with 3,962 (3.6%) registered this fiscal year. Approximately 69.1 percent of the total number of machines have been inspected at least once and 23,538 machines (21.5%) were inspected during fiscal year 1968.

Fifty-four percent of the reported medical machines were reported to be in compliance--however, it should be noted that many States were unable to report data on compliance activities (table 21).

Table 19. - Type of State Radiological Health X-ray Program by State, Fiscal Year 1968

State	Dental			Medical			Industrial		
	Regulatory	Voluntary	Combination	Regulatory	Voluntary	Combination	Regulatory	Voluntary	Combination
Total	27	13	13	28	11	14	29	8	13
Alabama	X			X			X		
Alaska		X			X			X	
Arizona			X	X			X		
Arkansas	X			X			X		
California	X			X					
Colorado	X			X			X		
Connecticut	X			X			X		
Delaware		X			X			X	
District of Columbia		X			X		X		
Florida	X			X					
Georgia		X			X			X	
Hawaii			X			X			X
Idaho	X			X			X		
Illinois	X			X			X		
Indiana			X			X			X
Iowa		X			X			X	
Kansas	X			X			X		
Kentucky	X			X			X		
Louisiana	X			X			X		
Maine	X			X					
Maryland	X			X			X		
Massachusetts	X			X			X		
Michigan	X			X			X		
Minnesota			X			X			X
Mississippi	X			X			X		
Missouri	X			X			X		
Montana		X			X			X	
Nebraska	X			X			X		
Nevada			X			X			X
New Hampshire	X			X			X		
New Jersey	X			X			X		
New Mexico			X			X			X
New York	X			X			X		
North Carolina	X			X			X		
North Dakota			X			X			X
Ohio			X			X			X
Oklahoma		X					X		
Oregon	X			X			X		
Pennsylvania	X			X					X
Rhode Island			X			X			X
South Carolina		X			X			X	
South Dakota			X			X			X
Tennessee	X			X			X		
Texas			X			X			X
Utah		X			X		(NP)	(NP)	(NP)
Vermont			X			X			X
Virginia			X			X			X
Washington	X			X			X		
West Virginia		X			X			X	
Wisconsin	X			X					
Wyoming		X				X	(NP)	(NP)	(NP)
Puerto Rico		X			X		(1)	(1)	(1)
Virgin Islands		X			X			X	

NP No program

[1]Department of Labor handles licensing and control of industrial users.

Table 20. - Estimates of Dental X-ray Program Activities by State, Fiscal Year 1968

State	Estimated Number of Machines	Registration		Inspection		Compliance		
		Total Registration	Machines Registered FY 1968	Total Number Inspected	Machines Inspected during FY 1968	Total Machines in Compliance	Machines not in Compliance FY 1968	Machines Corrected FY 1968
Total	98,557	81,280	4,285	81,892	16,682	70,347	3,121	2,683
Alabama	1,037	1,037	20	1,037	303	1,034	62	61
Alaska	96	96	-	96	10	83	4	3
Arizona	596	596	21	596	68	596	7	7
Arkansas	671	671	18	542	6	478	6	6
California	10,543	10,543	847	7,477	2,030	7,576	833	833
Colorado	1,211	1,197	156	1,174	345	1,161	151	116
Connecticut*								
Delaware	265	(NA)	(NA)	253	7	(NA)	(NA)	(NA)
District of Columbia	707	707	73	129	105	(UNK)	(UNK)	(UNK)
Florida	3,609	3,609	520	2,353	213	2,104	50	25
Georgia	1,262	(NP)	(NP)	1,262	34	1,262	5	5
Hawaii	389	381	10	376	18	330	1	-
Idaho	314	314	15	301	2	301	-	-
Illinois	5,017	5,017	(NA)	5,017	(NA)	5,017	(NA)	(NA)
Indiana	2,085	2,085	75	2,082	466	1,936	206	18
Iowa	2,500	(NP)	(NP)	1,535	27	(X)	(X)	(X)
Kansas	(NA)	(NA)	(NA)	20	20	20	-	-
Kentucky	1,123	1,123	103	1,084	193	1,080	13	9
Louisiana	1,400	1,400	299	52	40	52	25	25
Maine	390	390	3	380	2	(NA)	-	-
Maryland	1,650	1,640	184	1,320	577	1,249	110	76
Massachusetts	3,511	3,511	56	3,511	378	3,511	-	-
Michigan	3,757	3,757	69	[1]2,841	59	(UNK)	6	14
Minnesota	2,061	2,061	31	2,031	526	1,140	122	77
Mississippi	644	644	8	644	23	-	4	4
Missouri	2,150	2,022	148	1,911	389	1,779	17	3
Montana	344	344	344	8	8	-	-	-
Nebraska	978	978	25	978	40	495	5	5
Nevada	164	164	2	164	1	164	1	1
New Hampshire	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
New Jersey	4,981	4,981	79	5,304	3,284	4,354	40	222
New Mexico	406	406	4	406	4	406	-	-
New York	[2]14,016	[3]6,816	[4]250	14,016	[4]4,066	13,136	660	415
North Carolina	1,450	1,407	206	415	415	412	105	102
North Dakota	234	234	22	205	7	205	-	-
Ohio	4,030	4,030	(NA)	1,825	506	710	246	334
Oklahoma	1,100	6	-	753	-	751	-	-
Oregon	1,350	1,242	262	1,093	29	1,093	12	12
Pennsylvania	6,274	6,187	40	5,886	546	5,884	(NA)	(NA)
Rhode Island	541	507	2	541	7	541	6	6
South Carolina	630	(NP)	(NP)	277	20	277	-	-
South Dakota	348	348	11	311	10	(NA)	(NA)	(NA)
Tennessee	1,208	1,208	13	1,208	241	1,160	47	47
Texas	5,000	2,651	19	4,308	188	4,183	28	28
Utah	624	624	9	624	10	624	2	2
Vermont	199	199	13	199	35	199	1	7
Virginia	2,480	1,200	40	1,110	187	1,110	57	57
Washington	1,648	1,648	38	1,291	62	1,291	6	6
West Virginia	489	489	23	80	40	70	39	10
Wisconsin	2,387	2,387	58	2,387	1,015	2,310	188	111
Wyoming	175	(NP)	(NP)	129	7	125	-	-
Puerto Rico	500	410	159	337	100	125	36	36
Virgin Islands	13	13	-	13	13	13	-	-

NA not available; UNK unknown; NP no program; X not applicable; - represents zero; [1] inspection data for Detroit not included; [2] estimate for New York State based on 1967 data; [3] registration data for New York City not included; [4] inspection data for New York State not included. *No report received.

Table 21. - Estimates of Medical X-ray Program Activities by State, Fiscal Year 1968

State	Estimated Number		Registration		Inspection		Compliance		
	Machines	Tubes	Total Current Registration	Machines Registered FY 1968	Total Machines Inspected	Machines Inspected FY 1968	Total Machines in Compliance	Machines not in Compliance FY 1968	Machines Corrected FY 1968
Total	109,406	131,142	93,233	3,962	75,553	23,538	59,329	6,747	4,976
Alabama	1,331	1,571	1,331	34	1,331	618	1,238	48	245
Alaska	110	130	110	-	78	15	(UNK)	7	(UNK)
Arizona	1,005	1,217	1,005	80	717	489	300	85	76
Arkansas	1,008	1,190	983	162	774	154	370	57	57
California	10,289	12,141	10,289	208	9,775	2,803	9,775	1,486	1,486
Colorado	1,204	1,421	1,204	-	1,073	154	1,010	52	27
Connecticut*									
Delaware	332	509	(NA)	(NA)	125	22	(NA)	(NA)	(NA)
District of Columbia	413	662	413	6	376	318	(UNK)	(UNK)	(UNK)
Florida	4,369	5,156	4,369	674	1,911	207	1,147	83	42
Georgia	4,345	5,127	(NP)	(NP)	(NA)	(NA)	(NA)	(NA)	(NA)
Hawaii	287	347	279	17	226	105	83	62	-
Idaho	410	457	410	13	224	152	224	-	148
Illinois	4,631	5,465	4,631	(NA)	4,631	(NA)	4,631	(NA)	(NA)
Indiana	1,764	2,081	1,764	6	1,741	585	1,523	301	27
Iowa	2,528	3,653	(NP)	(NP)	161	28	(X)	(X)	(X)
Kansas	(NA)	(NA)	(NA)	(NA)	-	-	(X)	(X)	(X)
Kentucky	1,773	2,408	1,773	126	1,717	243	1,660	63	33
Louisiana	2,916	3,441	2,100	100	900	553	827	520	490
Maine	388	483	388	10	(UNK)	35	(NA)	8	4
Maryland	1,384	1,633	1,384	105	1,359	289	1,113	145	74
Massachusetts	4,122	4,864	2,279	123	1,824	568	1,350	150	79
Michigan	3,731	4,403	3,731	272	[a]2,783	1,470	[a]2,100	580	237
Minnesota	1,921	2,267	1,921	8	1,903	635	(UNK)	384	251
Mississippi	1,131	1,290	981	8	981	218	883	24	17
Missouri	3,400	4,012	3,095	152	1,299	368	853	186	43
Montana	593	700	593	593	48	96	-	-	-
Nebraska	1,030	1,392	1,030	44	1,030	335	500	266	130
Nevada	200	236	159	-	180	1	(UNK)	-	-
New Hampshire	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
New Jersey	4,360	5,145	4,360	130	4,593	2,253	3,642	15	348
New Mexico	516	679	516	4	409	16	391	-	-
New York	15,212	17,874	15,046	[b]383	15,066	[b]6,825	12,022	1,055	[b]547
North Carolina[c]	1,325	1,564	1,155	85	600	160	160	85	85
North Dakota	387	489	387	16	380	173	(UNK)	41	10
Ohio	4,805	5,670	4,803	(NA)	712	275	(NA)	100	(NA)
Oklahoma	2,742	3,557	375	75	384	60	(UNK)	26	26
Oregon	1,467	1,731	1,467	244	1,116	84	1,076	8	8
Pennsylvania	6,041	7,129	5,075	93	5,303	[d]1,174	5,200	(NA)	(NA)
Rhode Island	527	602	390	2	425	130	425	6	6
South Carolina	(UNK)	(UNK)	(NP)	(NP)	263	42	263	3	3
South Dakota	536	632	536	32	475	6	(NA)	(NA)	(NA)
Tennessee	1,602	1,890	1,602	31	971	143	569	130	60
Texas	3,920	4,626	3,920	54	1,633	188	1,586	188	141
Utah	570	642	(NP)	(NP)	547	18	362	5	4
Vermont	139	164	139	11	45	12	45	1	5
Virginia	1,900	2,650	733	10	94	50	94	50	50
Washington	2,661	2,903	2,661	(e)	2,460	682	2,415	130	87
West Virginia	796	1,063	796	16	110	93	48	62	(UNK)
Wisconsin	2,401	2,833	2,376	35	2,345	522	1,280	253	129
Wyoming	210	248	(NP)	(NP)	32	12	27	6	1
Puerto Rico	667	787	667	-	416	159	130	76	(UNK)
Virgin Islands	7	8	7	-	7	-	7	-	-

- represents zero; UNK unknown; NA not available; NP no program; X not applicable; [a] Data for Detroit not included; [b] New York State data not included; [c] hospitals are under jurisdiction of State Medical Care Commission and are not included in these data; [d] does not include follow-up inspections for Pennsylvania; [e] no formal registration in FY 1968. *No report received.

Industrial X-ray

Forty-three States reported a total of 9,709 industrial X-ray machines (table 22) in fiscal year 1968. Of this total, 9,335 machines (96.1%) are registered, with 850 (8.8%) registered during this fiscal year. Of all industrial X-ray machines reported in fiscal year 1968, 6,208 (63.9%) have been inspected at least once. Eighteen percent of all machines were inspected during this fiscal year and 420 machines (4.3%) were brought into compliance with State regulations (table 23).

Particle Accelerators

Of the States reporting data on particle accelerators, only 22 or 44 percent have regulatory programs dealing with these machines. Seven States have a voluntary program and 10 reported having a combination program. A total of 576 accelerators was reported this fiscal year, an increase of 114 from fiscal year 1967. However, it is possible that this increase includes existing machines that were reported for the first time. This was the first year information was requested on the number of accelerator inspections and it may be noted that there were 248 inspections reported from 18 States.

Table 22. - Estimated Number of Industrial X-ray Machines by Type, Fiscal Year 1968

State	Total[1]	Number of Machines			
		Radiographic	Fluoroscopic	Other Equipment	Analytical[2]
Total	9,709	4,789	269	770	2,436
Alabama	138	114	11	-	13
Alaska	2	-	-	-	2
Arizona	113	46	2	-	65
Arkansas	9	4	3	-	2
California	1,786	951	64	263	508
Colorado	99	67	2	-	30
Connecticut	(NR)	(NR)	(NR)	(NR)	(NR)
Delaware	33	3	-	-	30
District of Columbia	92	70	1	-	21
Florida	443	342	4	7	90
Georgia	(UNK)	(UNK)	(UNK)	(UNK)	(UNK)
Hawaii	8	7	-	-	1
Idaho	9	5	2	-	2
Illinois	620	198	30	74	318
Indiana	337	102	5	172	58
Iowa	(UNK)	(UNK)	(UNK)	(UNK)	(UNK)
Kansas	67	55	2	-	10
Kentucky	62	27	4	3	28
Louisiana	230	200	-	-	30
Maine	12	11	-	-	1
Maryland	190	71	4	78	37
Massachusetts	268	139	22	17	90
Michigan	291	162	18	9	102
Minnesota	76	58	4	-	14
Mississippi	34	19	2	2	11
Missouri	165	130	5	10	20
Montana	18	13	-	-	5
Nebraska	24	7	3	-	14
Nevada	(UNK)	(UNK)	(UNK)	(UNK)	(UNK)
New Hampshire	(NA)	(NA)	(NA)	(NA)	(NA)
New Jersey	[3]794	(NA)	(NA)	(NA)	200
New Mexico	[3]483	474	-	-	9
New York	813	448	28	-	337
North Carolina	82	54	(UNK)	-	28
North Dakota	5	4	-	-	1
Ohio	531	174	36	78	243
Oklahoma	523	486	2	3	32
Oregon	78	78	-	-	(UNK)
Pennsylvania[4]	48	39	1	-	8
Rhode Island	42	5	3	-	34
South Carolina	30	20	-	-	10
South Dakota	5	5	-	-	-
Tennessee	51	(UNK)	(UNK)	(UNK)	(UNK)
Texas	800	(UNK)	(UNK)	(UNK)	(UNK)
Utah	(UNK)	(UNK)	(UNK)	(UNK)	(UNK)
Vermont	5	4	1	-	-
Virginia	(UNK)	(UNK)	(UNK)	(UNK)	(UNK)
Washington	100	94	2	1	3
West Virginia	46	30	1	-	15
Wisconsin	146	72	7	53	14
Wyoming	(UNK)	(UNK)	(UNK)	(UNK)	(UNK)
Puerto Rico[5]	(NA)	(NA)	(NA)	(NA)	(NA)
Virgin Islands	1	1	-	-	-

- Represents zero. NR Not reported. UNK Unknown. NA Not available.

[1] Individual columns do not add up to total because in some cases the total number of machines is known, but breakdown is unavailable.

[2] Includes diffraction, spectographic, etc.

[3] Includes machines registered in New Mexico and operated out of other States.

[4] Philadelphia, Pennsylvania only.

[5] Puerto Rico Department of Labor handles licensing and control of industrial users.

Table 23. - Estimates of Industrial X-ray Program Activities by State, Fiscal Year 1968

State	Registration		Inspection		Compliance	
	Total Registration	Machines Registered FY 1968	Total Number Inspected	Machines Inspected FY 1968	Machines not in Compliance FY 1968	Machines Corrected FY 1968
Total	9,335	850	6,208	1,712	475	420
Alabama	138	40	118	50	(NA)	(NA)
Alaska	2	-	-	-	-	-
Arizona	113	98	30	30	3	3
Arkansas	9	5	9	-	-	-
California	1,786	118	1,029	270	149	149
Colorado	99	10	15	7	-	-
Connecticut	(NR)	(NR)	(NR)	(NR)	(NR)	(NR)
Delaware	3	-	2	-	-	-
District of Columbia	75	1	12	3	(UNK)	(UNK)
Florida	443	182	62	21	11	(UNK)
Georgia	(NP)	(NP)	17	5	5	5
Hawaii	7	1	1	-	-	-
Idaho	9	-	4	-	-	-
Illinois	620	(NA)	620	(NA)	(NA)	(NA)
Indiana	324	-	336	193	23	3
Iowa	(NP)	(NP)	-	-	(X)	(X)
Kansas	67	(X)	-	-	(X)	(X)
Kentucky	62	6	44	6	1	1
Louisiana	189	25	60	20	16	16
Maine	12	-	12	4	-	-
Maryland	190	20	30	19	8	6
Massachusetts	268	16	268	64	4	4
Michigan	291	(NR)	[1]49	[1]11	[1]5	[1]4
Minnesota	76	5	[2]102	4	-	-
Mississippi	34	7	34	11	-	-
Missouri	65	21	11	9	-	-
Montana	13	13	-	-	-	-
Nebraska	24	2	10	-	-	-
Nevada	21	-	1	1	-	-
New Hampshire	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
New Jersey	794	68	794	176	66	64
New Mexico	[2]483	3	20	17	-	-
New York	813	100	700	600	120	110
North Carolina	82	10	8	8	2	1
North Dakota	5	-	-	-	(UNK)	(UNK)
Ohio	531	(NA)	464	15	(X)	(X)
Oklahoma	521	32	399	3	1	1
Oregon	78	-	78	50	25	25
Pennsylvania[3]	42	12	48	20	8	6
Rhode Island	40	-	11	3	-	-
South Carolina	(NP)	(NP)	30	30	1	-
South Dakota	5	-	-	-	-	-
Tennessee	51	1	6	-	-	-
Texas	615	31	600	54	27	22
Utah	(NP)	(NP)	14	3	-	-
Vermont	(NP)	(NP)	5	-	-	-
Virginia	54	14	85	-	-	-
Washington	96	5	46	1	-	-
West Virginia	46	1	2	-	-	-
Wisconsin	139	3	22	4	-	-
Wyoming	(NP)	(NP)	(NP)	(NP)	(NP)	(NP)
Puerto Rico[4]	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
Virgin Islands	(NP)	(NP)	(NP)	(NP)	(NP)	(NP)

NA Not available. - Represents zero. NR Not reported. UNK Unknown. X Not applicable.

[1]City of Detroit only.

[2]Includes machines which are operated out of other States.

[3]Data is for Philadelphia, Pennsylvania only.

[4]Puerto Rico Department of Labor handles licensing and control of industrial X-ray users.

Table 24. - Estimates of Particle Accelerator Program Activities by State, Fiscal Year 1968

State	Total Number of Particle Accelerators	Total Number of Particle Accelerator Users	Type of Program			Total Number Registered	Total Number of Inspections
			Voluntary	Regulatory	Combination		
Total*	576	262	7	22	10	429	248
Alabama	5	4		x		5	3
Alaska	-	-	x			-	-
Arizona	2	2		x		-	-
Arkansas	2	2		x		-	2
California	80	17		x		80	(NA)
Colorado	3	3		x		3	-
Connecticut*			(NR)	(NR)	(NR)		
Delaware	3	2			x	-	-
District of Columbia	2	2	x			2	-
Florida	64	10		x		64	8
Georgia	(NA)	1	(NP)	(NP)	(NP)	(NA)	(NA)
Hawaii	-	-	(NP)	(NP)	(NP)	-	-
Idaho	2	2		x		2	-
Illinois	19	9		x		9	4
Indiana	16	9			x	16	16
Iowa	(UNK)	(UNK)	(NP)	(NP)	(NP)	(NP)	-
Kansas	6	3		x		8	-
Kentucky	7	7		x		7	7
Louisiana	7	7		x		7	-
Maine	(NA)	(NA)	(NP)	(NP)	(NP)	(NA)	(NA)
Maryland	12	(NA)		x		(NA)	-
Massachusetts	15	15		x		15	15
Michigan	27	10		x		2*/	25
Minnesota	4	3			x	4	1
Mississippi	1	1		x		1	1
Missouri	8	6		x		8	-
Montana	1	1	x			1	-
Nebraska	2	2		x		2	-
Nevada	3	2			x	2	-
New Hampshire	(NA)	(NA)	(NR)	(NR)	(NR)	(NA)	(NA)
New Jersey	9	9		x		9	9
New Mexico	2	2			x	2	-
New York	78	[a]57		x		75	[b]49
North Carolina	4	4	x			4	-
North Dakota	-	-			x	-	-
Ohio	24	7			x	24	-
Oklahoma	10	9		x		8	-
Oregon	5	5		x		5	5
Pennsylvania	53	27			x	27	46
Rhode Island	3	3			x	3	3
South Carolina	19	4	x			-	18
South Dakota	-	-	(NP)	(NP)	(NP)	-	-
Tennessee	(NA)	(NA)	(NR)	(NR)	(NR)	(NA)	(NA)
Texas	50	(UNK)			x	(NA)	30
Utah	11	(UNK)	(NP)	(NP)	(NP)	-	-
Vermont	-	-	(NP)	(NP)	(NP)	-	-
Virginia	6	4	x			(NP)	-
Washington	(NA)	(NA)	(NR)	(NR)	(NR)	(NA)	(NA)
West Virginia	4	4	x			3	-
Wisconsin	6	6		x		6	6
Wyoming	1	1	(NP)	(NP)	(NP)	(NP)	(NP)
Puerto Rico	-	-	(NP)	(NP)	(NP)	-	-
Virgin Islands	-	-	(NP)	(NP)	(NP)	-	-

NA Not Available NR Not Reported NP No Program UNK Unknown

[a]Includes data from New York City and New York Labor Department only.

[b]The total number of inspections for New York City is unknown.

*Connecticut excluded from total. No report received.

Radioactive Materials

During fiscal year 1968 one additional State (Colorado) entered into an agreement with the Atomic Energy Commission raising the number of agreement States to 18*. There were 6,656 current agreement State licenses for by-product, source, and special nuclear material. This represents 42 percent of all current licenses for such materials. The 18 agreement States made 2,997 inspections of "agreement material" during the fiscal year. Thirty-two States reported 554 joint AEC State inspections of AEC licensed material while 10 States made 422 State-only inspections (table 25).

Twenty-three States reported 92 incidents involving radium or radon during fiscal year 1968. Of these incidents 88 investigations were conducted (table 26).

Forty-seven States reported that 3,712 facilities using radium and/or radon had been licensed, registered or otherwise accounted for. At least 1,003 initial and re-inspections and 242 follow-up inspections were made of these facilities while at least 434 were brought up to full or partial compliance with minimum State requirements. These totals do not include States which do not keep or could not report such data (table 27).

*As of June 1, 1969 there are 19 agreement States; Idaho entered an agreement with AEC effective October 1, 1968.

Table 25. - State Activities Related to the Control of By-product, Source, and Special Nuclear Materials, Fiscal Year 1968

State	AEC Licensed Materials			Agreement State Licensed Materials[a]	
	Number of Licenses	Number of Inspections		Number of Licenses	Number of Inspections
		Joint AEC-State	State (only)		
Total	3,257	554	422	6,656	2,387
Alabama*	54	-	-	219	163
Alaska	32	(UNK)	-		
Arizona*	17	2	-	105	55
Arkansas*	5	10	-	282**	52
California*	284	(NA)	(NA)	1,067	605**
Colorado*	41	20	-	189**	7
Connecticut	252	(NR)	(NR)		
Delaware	59	17	-		
District of Columbia	240	8	3	474	27
Florida*	51	3	-		
Georgia	263	75	-		
Hawaii	87	15	-		
Idaho	44	-	-		
Illinois	757	12	28		
Indiana	306	24	3		
Iowa	141	35	-		
Kansas*	16	-	-	178	70
Kentucky*	17	-	-	162**	41
Louisiana*	24	-	-	211**	(NR)
Maine	65	3	5		
Maryland	239	16	-		
Massachusetts	568	42	175		
Michigan	535	10	59		
Minnesota	367	-	-		
Mississippi*	11	-	-	102**	64
Missouri	300	-	-		
Montana	54	3	-		
Nebraska*	6	-	-	74	51
Nevada	45	3	-		
New Hampshire*	9	(NA)		70	(NA)
New Jersey	582	96	76		
New Mexico	141	10	-		
New York*	264	2	1	1,674	966
North Carolina*	18	-	-	226**	109
North Dakota	38	8	3		
Ohio	753	-	-		
Oklahoma	194	-	69		
Oregon*	9	6	-	220**	70
Pennsylvania	458	(NA)	(NA)		
Rhode Island	66	15	-		
South Carolina	142	2	-		
South Dakota	64	-	-		
Tennessee*	25	4	-	266**	66
Texas*	146	20	-	845	511**
Utah	88	14	-		
Vermont	32	-	-		
Virginia	309	50	-		
Washington*	21	4	-	232	139**
West Virginia	151	20	-		
Wisconsin	250	-	-		
Wyoming	43	3	-		
Puerto Rico	52	-	-		
Virgin Islands	2	2	-		

[a]Data given for 18 States which had entered into an agreement as of June 30, 1968, with the Atomic Energy Commission for licensing of material previously under their control.

*Agreement States **All radioactive material (UNK) Unknown (NA) Not Available (NR) Not Reported

Table 26. - Reported Incidents and Investigations Involving Radium or Radon, Fiscal Year 1968

State	Number of Reported Incidents	Number Investigated	State	Number of Reported Incidents	Number Investigated
Total	92	88			
Alabama	2	1	Nebraska	2	2
Alaska	UNK	UNK	Nevada	-	-
Arizona	-	-	New Hampshire	-	-
Arkansas	1	1	New Jersey	3	3
California	20	20	New Mexico	-	-
Colorado	-	-	New York	14	14
Conecticut	NA	NA	North Carolina	-	1
Delaware	-	-	North Dakota	-	-
D. C.	1	1	Okio	1	1
Florida	2	2	Oklahoma	2	2
Georgia	3	3	Oregon	-	-
Hawaii	-	-	Pennsylvania	2	2
Idaho	-	-	Rhode Island	-	-
Illinois	2	1	South Carolina	-	-
Indiana	1	1	South Dakota	-	-
Iowa	-	-	Tennessee	3	-
Kansas	-	-	Texas	17	17
Kentucky	-	-	Utah	-	-
Louisiana	5	5	Vermont	3	3
Maine	-	-	Virginia	-	-
Maryland	1	1	Washington	4	4
Massachusetts	-	-	West Virginia	-	-
Michigan	1	1	Wisconsin	1	1
Minnesota	1	1	Wyoming	-	-
Mississippi	-	-	Puerto Rico	-	-
Missouri	-	-	Virgin Islands	-	-
Montana	-	-			

- Represents zero. NA Not available. UNK Unknown.

Table 27. - State Activities Related to the Control of Radium and Radon, Fiscal Year 1968

State	Type of Program	Number of Facilities				Initial and Reinspection-Fiscal Year 1968							
						Total		Medical		Industrial		Other	
		Total	Med.	Ind.	Other	Initial	Reinspection	Initial	Reinspection	Initial	Reinspection	Initial	Reinspection
Total		3,712	2,358	978	376	[a]423	[a]580	[a]257	[a]384	[a]136	[a]175	[a]30	[a]21
Alabama	Lic.	52	34	15	3	7	31		30	5	1	2	
Alaska	(NP)	2	2	-	-	(UNK)	(UNK)						
Arizona	Lic.	5	5	-	-	2	-	2					
Arkansas	Lic.	45	35	5	5	-	45		35		5		5
California	Lic./Reg.	381	189	122	70	[a]230	[a]375	[a]69	[a]112	[a]100	[a]163	[a]61	[a]100
Colorado	Lic.	(NA)				(NA)	(NA)						
Connecticut*	Reg.					-	-						
Delaware	Reg.	16	7	9	-	2	-	1		1			
Dist. of Col.	Reg.	16	15	1	-	-	6		6				
Florida	Lic.	46	38	7	1	60	4	20	4	25		15	
Georgia	Reg.	46	44	2	-	-	25		25				
Hawaii	Reg.	1	1	-	-	-	-						
Idaho	Lic.	11	6	3	2	-	-						
Illinois	Reg.	348	242	98	8	68	23	59	20	9	2		1
Indiana	Lic.	95	54	29	12	2	31	1	19	1	6		6
Iowa	(NP)	(UNK)				(NP)	(NP)						
Kansas	Lic.	68	38	23	7	26	-	18		6		2	
Kentucky	Lic.	40	28	10	2	1	8		4		3	1	1
Louisiana	Lic.	83	60	23	-	64	-	17		45		2	
Maine	Reg.	21	19	-	2	-	2		2				
Maryland	Reg.	53	41	10	2	15	-	10		4		1	
Massachusetts	Reg.	176	110	66	-	13	-	3		10			
Michigan	Reg.	168	74	34	60	13	49	11	46	2	3		
Minnesota	Reg.	36	26	9	1	3	4		2	3	2		
Mississippi	Lic.	60	36	19	5	4	30		17	3	11	1	2
Missouri	Reg.	24	16	5	3	-	-						
Montana	Reg.	60	55	2	3	-	-						
Nebraska	Reg.	59	46	7	6	2	-	2					
Nevada	Reg.	5	4	1	-	1	-	1					
New Hampshire	Lic.	(NA)				-	-						
New Jersey	Lic.	106	62	42	2	-	157		103		54		
New Mexico	Reg.	26	11	13	2	-	2				2		
New York	Lic./Reg.	436	378	41	17	30	63	30	24		39		
North Carolina	Lic.	44	28	8	8	22	2	15	1	3		4	1
North Dakota	Reg.	17	10	1	6	6	-	5		1			
Ohio	Reg.	225	130	47	48	3	-	3					
Oklahoma	Reg.	112	20	91	1	12	31	2		9	31	1	
Oregon	Lic.	47	44	1	2	10	-	8		1		1	
Pennsylvania	Reg.	363	171	127	65	4	59	1	40	3	14		5
Rhode Island	Reg.	45	3	40	2	(NA)	(NA)						
South Carolina	Reg.	31	20	10	1	9	5	7	3	2	2		
South Dakota	Reg.	22	7	10	5	-	-						
Tennessee	Lic.	43	38	5	-	35	-	32		3			
Texas	Lic.	[b]68	57	7	4	(c)	[a]511	(c)	[a]134	(c)	[a]271	(c)	[a]106
Utah	(NP)	(NP)				-	-						
Vermont	(NP)	6	6	-	-	6	-	6					
Virginia	(NP)	20	15	5	-	-	-						
Washington	Lic.	40	26	9	5	[a]92	[a]47	[a]36	[a]20	[a]37	[a]11	[a]19	[a]16
West Virginia	Reg.	49	32	14	3	1	2	1	2				
Wisconsin	(NP)	80	60	7	13	2	-	2					
Wyoming	(NP)	(UNK)				-	-						
Puerto Rico	Reg.	14	14	-	-	-	1		1				
Virgin Islands	Reg.	1	1	-	-	-	-						

[a]California, Texas, and Washington figures include all radioactive materials and are not added into grand totals.
[b]Facilities licensed with radium only. Facilities licensed with radium plus other radioisotopes are not included.
[c]Initial inspections are not tabulated separately. Are included with reinspections.
(UNK) Unknown (NA) Not Available (NP) No Program - Represents zero. *Data not received.

Table 27. - (Continued)

State	Follow-up Inspections-Fiscal Year 1968				Facilities Not In Compliance Fiscal Year 1968	Facilities Brought Into Compliance Fiscal Year 1968	
	Total	Medical	Industrial	Other		Full Compliance	Partial Compliance
Total	[a]242	[a]177	[a]55	[a]10	[a]403	[a]315	119
Alabama	-				17	17	-
Alaska	-				(X)	(X)	(X)
Arizona	-				1	-	-
Arkansas	-				16	16	-
California	[a]168	[a]50	[a]73	[a]45	[a]216	[a]216	-
Colorado	-				-	-	-
Connecticut*	(NA)				(NA)	(NA)	(NA)
Delaware	1	-	1	-	(X)	(X)	(X)
Dist. of Col.	8	-	-	8	(UNK)	(UNK)	(UNK)
Florida	-				5	5	-
Georgia	-				3	3	-
Hawaii	-				-	-	-
Idaho	-				-	-	-
Illinois	46	44	1	1	69	37	14
Indiana	19	14	5	-	40	10	5
Iowa	(NP)				(X)	(X)	(X)
Kansas	3	2	1	-	15	15	-
Kentucky	-				4	1	-
Louisiana	3	-	3	-	49	48	-
Maine	-				-	-	-
Maryland	3	2	1	-	7	6	1
Massachusetts	-				-	-	-
Michigan	18	17	-	1	[b]10	[b]4	-
Minnesota	6	5	1	-	1	3	3
Mississippi	-				2	5	-
Missouri	-				(UNK)	(UNK)	(UNK)
Montana	-				-	-	-
Nebraska	2	2	-	-	2	2	-
Nevada	-				-	-	-
New Hampshire	(NA)				(NA)	(NA)	(NA)
New Jersey	-				(c)	(c)	(c)
New Mexico	-				-	-	-
New York	47	31	16	-	47	17	29
North Carolina	-				20	18	6
North Dakota	-				-	-	-
Ohio	6	6	-	-	(X)	(X)	(X)
Oklahoma	26	-	26	-	49	20	49
Oregon	2	2	-	-	8	8	-
Pennsylvania	-				(NA)	63	-
Rhode Island	-				-	-	-
South Carolina	1	1	-	-	(X)	(X)	(X)
South Dakota	-				-	-	-
Tennessee	26	26	-	-	32	17	11
Texas	(NA)				[a]273	[a]273	-
Utah	-				-	-	-
Vermont	24	24	-	-	(X)	(X)	(X)
Virginia	-				-	-	-
Washington	[a]1	-	-	[a]1	[a]18	[a]18	-
West Virginia	1	1	-	-	1	-	1
Wisconsin	-				-	-	-
Wyoming	-				-	-	-
Puerto Rico	-				5	-	-
Virgin Islands	-				-	-	-

[a]California, Texas, and Washington figures include all radioactive materials and are not included in grand totals.
[b]Detroit only.
[c]An item must be in compliance before a license is issued.
(X) Not Applicable. (NA) Not Available (UNK) Unknown (NP) No Program *Data not received.

Nuclear Reactors, Fuel Reprocessing Plants and Radioactive Waste Disposal

(January 1968 to December 1968)

Nuclear reactors are licensed by the Atomic Energy Commission. As of December 31, 1968, there were 255 stationary reactors of all types planned, under construction, or in operation, in the United States (Table 28). The number of applications to the Atomic Energy Commission to construct nuclear power plants decreased this year. Thirteen applications were filed with the Commission with a total design electrical output of 10,880 Mwe as compared to 29 applications in 1967 with an output of 24,287 Mwe.

General Electric began construction of its Midwest Fuel Reprocessing Plant near Morris, Illinois. Upon completion this will be the second commercial plant in operation, the first being Nuclear Fuel Services located at West Valley, New York. The plant is being built on a 1300-acre tract just south of the Dresden Nuclear Power Station and is scheduled to begin commercial operations in mid-1970. An application was filed with the AEC by Allied Chemical Corporation for a plant to process irradiated fuel, the third such commercial plant in the U.S. The plant will be located in Barnwell County, South Carolina, on a 1730-acre site which is now part of the AEC's Savannah River Plant reservation. It will be know as the Barnwell Nuclear Fuel Plant and is expected to be ready for commercial operation by 1973.

Commercial burial sites for low level radioactive waste are located in Richland, Washington; Beatty, Nevada; Sheffield, Illinois; Morehead, Kentucky; and West Valley, New York. The number of commercial burial sites has not increased over the 1967 figure.

Table 28. - Nuclear Reactors Being Built, Planned, or Operable by State, December 31, 1968

State	Total*	Power Reactors		All Other Reactors	
		Operable	Being Built or Planned	Operable	Being Built or Planned
Total	240	13	76	147	17
Alabama	2		2		
Alaska	1			1	
Arizona	1			1	
Arkansas	2		1		1
California	34	2	4	13	1
Colorado	4		1	1	2
Connecticut	4	1	2	1	
Delaware	1			1	
District of Columbia	3			3	
Florida	5		4	1	
Georgia	4		1	3	
Hawaii					
Idaho	14			12	2
Illinois	13	1	6	6	
Indiana	2		1	1	
Iowa	2		1	1	
Kansas	2			2	
Kentucky					
Louisiana					
Maine	1		1		
Maryland	7		6	1	
Massachusetts	7	1	4	1	1
Michigan	11	1	7	2	1
Minnesota	4	1	3		
Mississippi	1				1
Missouri	2			2	
Montana					
Nebraska	3		2	1	
Nevada	3			3	
New Hampshire	1		1		
New Jersey	5		4	1	
New Mexico	3			3	
New York	26	3	9	10	4
North Carolina	5		3	1	1
North Dakota					
Ohio	6		1	5	
Oklahoma	2			2	
Oregon	4		1	3	
Pennsylvania	12	4	5	2	1
Rhode Island	1			1	
South Carolina	11		4	7	
South Dakota					
Tennessee	4		2	2	
Texas	5			5	
Utah	2			2	
Vermont	1		1		
Virginia	3		3		
Washington	12	1		10	1
West Virginia	1			1	
Wisconsin	3	1	2		
Wyoming	1			1	
Puerto Rico	1			1	
Virgin Islands					

*Excludes reactors for export, those which are shut down or dismantled, and reactors in ships.

APPENDIX A

Table 1. - Total Expenditures* for State and Local Radiological Health Activities by Program Area and State, Fiscal Year 1968

State	Total	Basic Planning and Administration	X-ray Survey and Control	Environmental Surveillance	Radioactive Materials	Electronic Products	Other Radiological Health Activities
Total	[a]7,375.1	1,388.4	2,278.7	1,763.2	1,473.8	221.5	249.5
Alabama	102.5	14.2	37.6	19.6	23.6	0.8	6.7
Alaska	5.9	2.3	1.5	1.5	0.3	-	0.3
Arizona	36.2	9.0	9.0	1.3	15.6	0.5	0.8
Arkansas	161.6	16.2	64.6	32.3	32.3	8.1	8.1
California	963.8	77.1	298.9	289.1	289.1	9.6	-
Colorado	99.3	34.7	14.9	14.9	24.8	5.0	5.0
Connecticut[b]							
Delaware	31.5	4.4	10.4	10.4	3.1	1.6	1.6
District of Columbia	93.9	68.0	9.4	13.8	0.7	1.1	0.9
Florida	162.0	32.4	40.5	24.3	40.5	16.2	8.1
Georgia	130.8	26.2	45.8	13.1	39.2	-	6.5
Hawaii	39.6	7.0	7.0	19.9	2.7	3.0	-
Idaho	37.0	12.9	5.6	14.8	2.6	0.4	0.7
Illinois	235.3	46.7	130.0	6.3	43.3	8.5	0.5
Indiana	70.9	17.7	21.3	21.3	9.9	0.7	-
Iowa	36.6	7.3	9.1	18.3	0.4	0.4	1.1
Kansas	89.1	22.2	13.4	13.4	26.7	4.5	8.9
Kentucky	91.0	20.9	26.4	18.2	22.8	2.7	-
Louisiana	207.2	51.7	47.6	53.5	40.8	-	13.6
Maine	32.0	[c]8.3	[c]4.2	[c]14.3	[c]4.2	-	[c]1.0
Maryland	135.9	16.3	34.0	55.7	20.4	6.8	2.7
Massachusetts	175.0	57.7	62.0	26.3	14.4	8.8	5.8
Michigan	154.0	23.1	92.4	23.1	10.8	1.5	3.1
Minnesota	64.7	12.9	31.2	14.2	1.9	1.3	3.2
Mississippi	50.6	12.7	15.1	0.5	15.2	-	7.1
Missouri	84.3	33.8	33.7	4.2	4.2	-	8.4
Montana	19.6	8.9	2.1	0.6	5.1	-	2.9
Nebraska	44.4	4.9	17.8	4.9	11.1	1.3	4.4
Nevada	8.0	4.0	1.0	1.0	1.0	1.0	-
New Hampshire	37.2	7.5	11.7	7.5	8.0	2.5	-
New Jersey	261.2	52.2	52.2	65.3	65.3	13.1	13.1
New Mexico	58.6	17.6	5.9	20.5	2.9	2.9	8.8
New York	2,002.4	320.5	639.8	606.4	317.8	77.9	40.0
North Carolina	106.9	20.1	26.5	27.4	11.9	1.5	19.5
North Dakota	34.9	6.3	10.8	10.5	7.0	0.3	-
Ohio	142.0	35.5	63.9	21.3	7.1	7.1	7.1
Oklahoma	36.4	5.1	7.6	12.0	6.6	1.1	4.0
Oregon	90.7	18.1	18.1	27.3	27.2	-	-
Pennsylvania	202.9	34.7	79.5	38.8	37.4	8.8	3.7
Rhode Island	64.3	21.3	11.2	24.6	2.3	1.3	3.6
South Carolina	46.3	9.3	7.0	23.5	5.6	-	0.9
South Dakota	18.1	3.6	10.9	1.8	0.9	0.2	0.7
Tennessee	59.8	9.0	15.0	6.0	26.9	0.1	2.8
Texas	328.5	32.8	32.8	32.9	197.1	3.3	29.6
Utah	68.1	49.7	2.0	11.6	2.0	1.4	1.4
Vermont	23.6	7.1	14.1	1.2	1.2	-	-
Virginia	60.4	15.1	24.2	9.1	3.0	6.0	3.0
Washington	118.3	14.2	35.6	31.9	31.9	1.2	3.5
West Virginia	35.9	5.4	10.8	16.1	1.8	1.1	0.7
Wisconsin	130.5	19.6	91.3	14.4	1.3	1.3	2.6
Wyoming	22.0	10.3	2.4	6.9	0.7	1.7	-
Puerto Rico	61.7	18.6	18.5	15.4	1.2	4.9	3.1
Virgin Islands	1.7	1.3	0.4	-	-	-	-

*Includes Federal funds.
[a]Excludes Connecticut.
[b]No report received.
[c]Program area breakdown was not provided by State, but approximated from data provided on annual inventory.
-Represents zero.

Table 2. - Distribution of State and Local Radiological Health Personnel* by Personnel Category and State, Fiscal Year 1968

State	Total Personnel		Program Administrators		Radiological Health Directors		Radiological Health Specialists		Radiological Health Technicians		Supporting Personnel	
	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time
Total	[a]368	[a]387		72	42	15	254	17	72	8		275
Alabama	12	6		3		1	8		4			2
Alaska	-	-										
Arizona	3	1			1		1		1			1
Arkansas	12	4			2		6		4	1		3
California	48	4			3		36	2	9			2
Colorado	6	8		1	1		4	1	1			6
Connecticut	(b)	(b)										
Delaware	2	-			1		1					
District of Columbia	4	1		1	1		3					
Florida	10	18		2	1		6	2	3	1		13
Georgia	10	1		1	1		7		2			
Hawaii	2	4		1		1	2					2
Idaho	2	19		1			2	2				16
Illinois	14	9		1	1		3		10			8
Indiana	4	5		3	1		3					2
Iowa	3	7		6			1		2			1
Kansas	4	6		2	1		3	2				2
Kentucky	7	-			2		4		1			
Louisiana	8	12		1	1	1	7	1				9
Maine	1	4		2		1	1					1
Maryland	8	1		1	1		7					
Massachusetts	8	12		5	1		4	1	3			6
Michigan	6	20		2	3		3					18
Minnesota	4	6		3	1		3	1				2
Mississippi	4	1		1	2		2					
Missouri	4	7		3	1		3					4
Montana	-	4		1								3
Nebraska	3	2		2	1		2					
Nevada	-	5		1								4
New Hampshire	3	2					3					2
New Jersey	14	-			1		11		2			
New Mexico	1	11		3			1	1		1		1
New York	79	104		4	4	1	57		18			99
North Carolina	9	5		2	1		3		5			3
North Dakota	1	7		2		1	1			1		3
Ohio	4	24		2	1		2		1			22
Oklahoma	3	3		1		1	3			1		
Oregon	6	1			1		5					1
Pennsylvania	16	10		1	1	1	12	1	3	2		5
Rhode Island	1	9		1	1			1				7
South Carolina	4	3		1		1	2		2	1		
South Dakota	-	3		2		1						
Tennessee	3	9			1	1	2					8
Texas	11	2		1	1		9	1	1			
Utah	1	10		2		1	1					7
Vermont	1	2				1	1					1
Virginia	4	5		2			4					3
Washington	5	4		1	1	1	4					2
West Virginia	2	2				1	2					1
Wisconsin	5	-			1		4					
Wyoming	-	2		1				1				
Puerto Rico	6	1		1	1		5					
Virgin Islands	-	1		1								

*Excludes Public Health Service personnel on loan to States.
[a]Excludes Connecticut.
[b]No report received.
- Represents zero.

Table 3. - Radiological Health Personnel* Man Equivalence by Program Area and State, Fiscal Year 1968

State	Total	Basic Planning And Administration		X-ray Survey And Control		Environmental Surveillance		Radioactive Materials		Electronic Products		Other Radiological Health Activies	
		Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time
Total	[a]438.6	46.4	17.0	133.1	22.2	91.8	20.4	74.9	5.6	4.7	0.9	17.1	4.5
Alabama	13.0	0.50	0.50	4.85	0.25	3.90	0.18	2.60	0.10	0.10	-	0.05	-
Alaska	-	-	-	-	-	-	-	-	-	-	-	-	-
Arizona	3.1	0.40	-	0.90	-	0.05	0.10	1.50	-	0.06	-	0.09	-
Arkansas	12.8	1.95	-	1.85	-	1.25	0.75	6.95	-	-	-	-	-
California	49.3	3.59	0.05	17.93	0.08	11.45	1.00	15.03	0.22	-	-	-	-
Colorado	7.5	0.90	0.75	1.60	0.35	1.45	0.30	0.85	0.05	0.25	0.05	0.95	-
Connecticut[b]													
Delaware	2.0	0.40	-	0.35	-	0.90	-	0.15	-	0.05	-	0.15	-
District of Columbia	4.1	2.09	0.05	0.70	-	1.03	-	0.05	-	0.06	-	0.07	-
Florida	13.7	1.80	0.35	1.80	1.30	2.15	1.05	2.15	0.40	0.10	0.45	2.00	0.15
Georgia	10.1	1.50	0.10	3.75	-	2.00	-	2.75	-	-	-	-	-
Hawaii	3.0	-	0.45	0.70	0.05	1.05	0.35	0.05	0.15	0.20	-	-	-
Idaho	3.7	0.40	0.45	0.75	0.05	0.35	1.16	0.25	0.05	0.10	-	0.15	-
Illinois	14.9	2.30	0.80	9.78	-	0.13	0.08	1.47	0.02	0.32	-	-	-
Indiana	4.5	0.50	0.40	1.50	0.07	1.50	-	0.30	0.05	0.02	-	0.18	-
Iowa	3.7	0.25	0.42	1.15	0.11	1.50	0.09	0.05	0.07	-	0.01	0.05	0.02
Kansas	5.6	0.95	0.42	0.60	0.08	0.45	0.50	1.30	-	0.25	-	0.45	0.58
Kentucky	7.0	1.25	-	2.00	-	2.00	-	1.65	-	0.10	-	-	-
Louisiana	11.2	1.00	0.67	2.70	-	1.60	2.15	2.05	0.10	0.10	0.10	0.55	0.20
Maine	1.8	-	0.20	-	0.25	0.80	0.15	0.20	0.10	-	-	-	0.05
Maryland	8.2	1.00	0.20	3.75	-	2.10	-	0.80	-	0.35	-	-	-
Massachusetts	10.5	0.50	1.10	4.10	0.15	2.60	1.10	0.60	0.05	0.10	0.05	0.10	0.05
Michigan	8.6	0.45	0.30	3.65	0.16	1.20	0.49	0.55	0.14	0.05	0.14	0.10	1.33
Minnesota	5.3	0.55	0.35	2.90	-	0.30	0.90	0.15	-	0.05	-	0.05	-
Mississippi	4.0	0.80	0.01	1.40	-	0.13	-	1.20	-	0.03	-	0.44	-
Missouri	5.0	0.85	0.35	2.05	0.35	0.20	0.25	0.40	0.02	-	-	0.50	0.03
Montana	0.3	-	0.01	-	-	-	0.02	-	0.25	-	-	-	-
Nebraska	3.1	0.70	0.02	1.37	-	0.10	-	0.70	-	0.03	-	0.10	0.05
Nevada	0.4	-	0.18	-	0.10	-	0.07	-	0.02	-	0.03	-	-
New Hampshire	3.4	-	0.3	1.10	-	0.90	0.10	0.70	-	0.30	-	-	-
New Jersey	14.0	1.75	-	4.40	-	3.90	-	2.20	-	0.30	-	1.45	-
New Mexico	3.6	0.10	0.59	0.05	0.05	0.80	1.85	0.03	0.05	0.01	0.01	0.01	0.06
New York	94.1	7.60	0.90	29.25	11.30	26.45	0.65	11.60	2.10	0.15	-	3.95	0.20
North Carolina	9.6	0.70	0.30	2.60	-	2.60	0.30	0.90	-	0.10	-	2.10	-
North Dakota	3.1	0.05	0.40	-	0.15	0.80	0.10	0.05	0.28	-	0.02	0.10	1.18
Ohio	9.4	0.90	0.70	0.90	4.50	1.70	0.20	0.20	-	0.15	-	0.15	-
Oklahoma	4.1	0.10	0.35	0.95	-	0.60	0.50	1.10	-	0.10	0.05	0.15	0.20
Oregon	6.0	1.25	0.02	1.00	-	1.80	-	1.80	-	0.10	-	0.05	-
Pennsylvania	19.7	2.30	0.45	7.20	1.00	2.90	1.85	3.10	0.35	0.50	-	-	0.05
Rhode Island	2.9	0.50	0.25	0.35	0.05	0.03	1.40	0.02	0.10	0.05	-	0.05	0.07
South Carolina	5.4	0.50	0.50	0.34	0.78	2.85	0.10	0.30	0.02	0.01	-	-	-
South Dakota	0.9	-	0.71	-	0.12	-	0.02	-	-	-	0.01	-	0.02
Tennessee	4.0	0.51	0.50	0.22	0.42	0.12	-	1.00	0.02	0.01	-	1.14	0.05
Texas	12.2	1.40	0.33	1.80	0.05	0.42	-	6.05	0.85	0.10	-	1.23	-
Utah	2.0	0.25	0.28	-	0.15	0.75	0.51	-	-	-	-	-	0.05
Vermont	1.8	-	0.50	0.90	-	0.10	0.30	-	-	-	-	-	-
Virginia	4.8	1.10	0.30	1.60	0.04	1.15	0.44	0.05	-	0.10	-	-	-
Washington	5.8	0.75	-	1.50	-	1.02	0.80	1.69	-	0.02	-	0.02	-
West Virginia	2.8	0.20	0.60	0.90	-	0.60	0.12	0.15	0.02	0.08	-	0.07	0.06
Wisconsin	5.0	0.50	-	3.15	-	1.25	-	-	-	0.01	-	0.09	-
Wyoming	1.2	-	0.45	-	0.20	-	0.45	-	0.05	-	-	-	0.05
Puerto Rico	6.3	1.30	0.30	2.80	-	0.85	-	0.16	-	0.29	-	0.60	-
Virgin Islands	0.1	-	0.07	-	0.02	-	-	-	-	-	-	-	0.01

*Excludes Public Health Service personnel on loan to States.
[a]Excludes Connecticut.
- Represents zero.
[b]No report received.

Table 4 - Distribution of Radiological Health Personnel* Earning Under $5,000 by Personnel Category and State, Fiscal Year 1968

State	Total Personnel		Program Administrators		Radiological Health Directors		Radiological Health Specialists		Radiological Health Technicians		Supporting Personnel	
	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time
Total	[a]7	[a]6					3		4	3		3
Alabama	1								1			
Alaska												
Arizona												
Arkansas												
California												
Colorado												
Connecticut	(b)	(b)										
Delaware												
District of Columbia												
Florida												
Georgia												
Hawaii												
Idaho												
Illinois												
Indiana												
Iowa												
Kansas												
Kentucky												
Louisiana												
Maine												
Maryland												
Massachusetts												
Michigan												
Minnesota												
Mississippi												
Missouri												
Montana												
Nebraska												
Nevada												
New Hampshire												
New Jersey												
New Mexico		1								1		
New York												
North Carolina	1								1			
North Dakota		3								1		2
Ohio												
Oklahoma		1								1		
Oregon												
Pennsylvania												
Rhode Island												
South Carolina	2								2			
South Dakota												
Tennessee		1										1
Texas												
Utah												
Vermont												
Virginia												
Washington												
West Virginia												
Wisconsin												
Wyoming												
Puerto Rico	3						3					
Virgin Islands												

*Excludes Public Health Service personnel on loan to States.
[a]Excludes Connecticut.
[b]No report received.

Table 5. - Distribution of Radiological Health Personnel* Earning $5,000 to $6,999 by Personnel Category and State, Fiscal Year 1968

State	Total Personnel		Program Administrators		Radiological Health Directors		Radiological Health Specialists		Radiological Health Technicians		Supporting Personnel	
	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time
Total	[a]58	[a]13			1		14	1	43	3		9
Alabama	5						2		3			
Alaska												
Arizona												
Arkansas	6						2		4			
California	3								3			
Colorado	1								1			
Connecticut	(b)	(b)										
Delaware												
District of Columbia												
Florida	2						1		1			
Georgia	2								2			
Hawaii												
Idaho		3						1				2
Illinois	6								6			
Indiana												
Iowa	2								2			
Kansas												
Kentucky	1								1			
Louisiana												
Maine												
Maryland	2						2					
Massachusetts												
Michigan												
Minnesota												
Mississippi												
Missouri		1										1
Montana												
Nebraska												
Nevada												
New Hampshire	1						1					
New Jersey												
New Mexico		1										1
New York	16								16			
North Carolina												
North Dakota												
Ohio												
Oklahoma	1						1					
Oregon												
Pennsylvania	3	2							3	2		
Rhode Island		1										1
South Carolina	1	1					1			1		
South Dakota												
Tennessee		2										2
Texas	2						1		1			
Utah		2										2
Vermont												
Virginia												
Washington												
West Virginia												
Wisconsin	1						1					
Wyoming												
Puerto Rico	3				1		2					
Virgin Islands												

*Excludes Public Health Service personnel on loan to States.
[a]Excludes Connecticut.
[b]No report received.

Table 6. - Distribution of Radiological Health Personnel* Earning $7,000 to $8,999 by Personnel Category and State, Fiscal Year 1968

State	Total Personnel		Program Administrators		Radiological Health Directors		Radiological Health Specialists		Radiological Health Technicians		Supporting Personnel	
	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time
Total	[a]105	[a]37		1			84	4	21			32
Alabama	4						4					
Alaska												
Arizona	2	1					1		1			1
Arkansas	3	2					3					2
California	11						5		6			
Colorado	1	4					1					4
Connecticut	(b)	(b)										
Delaware	1						1					
District of Columbia	1						1					
Florida	1						1					
Georgia	4						4					
Hawaii	1	1					1					1
Idaho	1	7					1					7
Illinois	4						1		3			
Indiana												
Iowa												
Kansas		2						2				
Kentucky	1						1					
Louisiana	5	2					5					2
Maine	1						1					
Maryland	3						3					
Massachusetts	3	1					1		2			1
Michigan												
Minnesota	3	1					3					1
Mississippi												
Missouri	2						2					
Montana		1										1
Nebraska												
Nevada												
New Hampshire												
New Jersey	3						1		2			
New Mexico	1	2		1			1	1				
New York	23						21		2			
North Carolina	6						2		4			
North Dakota												
Ohio	2						1		1			
Oklahoma												
Oregon												
Pennsylvania	6	2					6	1				1
Rhode Island		3										3
South Carolina	1						1					
South Dakota												
Tennessee	1	1					1					1
Texas	3						3					
Utah		4										4
Vermont	1						1					
Virginia	3	2					3					2
Washington												
West Virginia	2	1					2					1
Wisconsin	1						1					
Wyoming												
Puerto Rico												
Virgin Islands												

*Excludes Public Health Service personnel on loan to States.
[a]Excludes Connecticut.
[b]No report received.

Table 7. - Distribution of Radiological Health Personnel* Earning $9,000 to $10,999 by Personnel Category and State, Fiscal Year 1968

State	Total Personnel		Program Administrators		Radiological Health Directors		Radiological Health Specialists		Radiological Health Technicians		Supporting Personnel	
	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time
Total	[a]91	[a]43		1	3	3	86	2	2			37
Alabama	2	1					2					1
Alaska												
Arizona												
Arkansas	2	1			1		1					1
California	5						5					
Colorado	3	2					3					2
Connecticut	(b)	(b)										
Delaware	1				1							
District of Columbia	2						2					
Florida	2						2					
Georgia	1						1					
Hawaii	1						1					
Idaho	1	5					1					5
Illinois	2						1		1			
Indiana	2						2					
Iowa												
Kansas	3	2					3					2
Kentucky	3						3					
Louisiana	2	3					2	1				2
Maine												
Maryland	2						2					
Massachusetts	4	2					3		1			2
Michigan	3	3					3					3
Minnesota												
Mississippi	3				1		2					
Missouri	1	2					1					2
Montana												
Nebraska	1						1					
Nevada		3										3
New Hampshire	2	1					2					1
New Jersey	6						6					
New Mexico		6	1									5
New York	15						15					
North Carolina		1										1
North Dakota	1						1					
Ohio	1						1					
Oklahoma	2	1				1	2					
Oregon	4						4					
Pennsylvania	3						3					
Rhode Island		1										1
South Carolina												
South Dakota												
Tennessee	1	1					1					1
Texas	4						4					
Utah	1	1					1					1
Vermont		1										1
Virginia	1	1					1					1
Washington	3	3				1	3					2
West Virginia		1				1						
Wisconsin	1						1					
Wyoming		1						1				
Puerto Rico												
Virgin Islands												

*Excludes Public Health Service personnel on loan to States.
[a]Excludes Connecticut.
[b]No report received.

Table 8. - Distribution of Radiological Health Personnel* Earning $11,000 to $13,999 by Personnel Category and State, Fiscal Year 1968

State	Total Personnel		Program Administrators		Radiological Health Directors		Radiological Health Specialists		Radiological Health Technicians		Supporting Personnel	
	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time
Total	[a]70	[a]62		11	19	8	51	5				38
Alabama		1		1								
Alaska												
Arizona	1				1							
Arkansas	1				1							
California	25				1		24					
Colorado	1	1			1			1				
Connecticut	(b)	(b)										
Delaware												
District of Columbia												
Florida	1						1					
Georgia	2						2					
Hawaii		2				1						1
Idaho		2						1				1
Illinois	1	1			1							1
Indiana	2	1			1		1					1
Iowa		2		2								
Kansas	1	1		1	1							
Kentucky	1				1							
Louisiana		6				1						5
Maine		3		1		1						1
Maryland	1				1							
Massachusetts		2										2
Michigan	2	13			2							13
Minnesota	1	1			1			1				
Mississippi	1				1							
Missouri		1										1
Montana		1										1
Nebraska	2	1		1	1		1					
Nevada												
New Hampshire		1										1
New Jersey	3						3					
New Mexico		1		1								
New York	12	2			1		11					2
North Carolina	2	1			1		1					1
North Dakota		1				1						
Ohio		1										1
Oklahoma		1		1								
Oregon	2				1		1					
Pennsylvania	3	2					3					2
Rhode Island		2						1				1
South Carolina		1				1						
South Dakota		1				1						
Tennessee	1	3			1							3
Texas	1	1					1	1				
Utah		1				1						
Vermont		1				1						
Virginia		1		1								
Washington	2				1		1					
West Virginia												
Wisconsin	1						1					
Wyoming		1		1								
Puerto Rico												
Virgin Islands		1		1								

*Excludes Public Health Service personnel on loan to States.
[a]Excludes Connecticut.
[b]No report received.

Table 9. - Distribution of Radiological Health Personnel* Earning $14,000 and over by Personnel Category and State, Fiscal Year 1968

State	Total Personnel		Program Administrators		Radiological Health Directors		Radiological Health Specialists		Radiological Health Technicians		Supporting Personnel	
	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time
Total	[a]29	[a]84		57	19	4	10	3				20
Alabama		3		2		1						
Alaska												
Arizona												
Arkansas												
California	4	4			2		2	2				2
Colorado		1		1								
Connecticut	(b)	(b)										
Delaware												
District of Columbia	1	1		1	1							
Florida	1				1							
Georgia	1	1		1	1							
Hawaii		1		1								1
Idaho		2		1								7
Illinois	1	8		1			1					1
Indiana		4		3								
Iowa	1	5		4			1					1
Kansas		1		1								
Kentucky	1				1							
Louisiana	1	1		1	1							
Maine		1		1								
Maryland		1		1								
Massachusetts	1	7		5	1			1				1
Michigan	1	2		2	1							
Minnesota		4		3								1
Mississippi		1		1								
Missouri	1	3		3	1							
Montana		2		1								1
Nebraska		1		1								
Nevada		2		1								1
New Hampshire												
New Jersey	2				1		1					
New Mexico												
New York	8	5		4	3	1	5					
North Carolina		3		2								1
North Dakota		3		2								1
Ohio	1	2		2	1							
Oklahoma												
Oregon		1										1
Pennsylvania	1	2		1	1	1						
Rhode Island	1	2		1	1							1
South Carolina		1		1								
South Dakota		2		2								
Tennessee		1				1						
Texas	1	1		1	1							
Utah		2		2								
Vermont												
Virginia		1		1								
Washington		1		1								
West Virginia												
Wisconsin	1				1							
Wyoming												
Puerto Rico		1		1								
Virgin Islands												

*Excludes Public Health Service personnel on loan to States.
[a]Excludes Connecticut.
[b]No report received.

Table 10. - Distribution of Full-time Radiological Health Directors* and Radiological Health Specialists* by Discipline and State, Fiscal Year 1968

State	Total	Chemist	Physicist	Engineer	Sanitarian	Biologist	M.D.	D.D.S.	All Other
Total	[a]296	64	90	34	26	23	3	-	56
Alabama	8	4	3						1
Alaska	-								
Arizona	2		1	1					
Arkansas	8	3	2			1			2
California	39	11	8	6	2	4			8
Colorado	5	1	3	1					
Connecticut[b]	-								
Delaware	2	1				1			
District of Columbia	4	1	3						
Florida	7	2	4				1		
Georgia	8	2	2			4			
Hawaii	2	1							1
Idaho	2			1					1
Illinois	4			3					1
Indiana	4	1		1	1				1
Iowa	1		1						
Kansas	4	3							1
Kentucky	6		6						
Louisiana	8	1	4	1	1				1
Maine	1	1							
Maryland	8	2	1			2			3
Massachusetts	5	2	1						2
Michigan	6	2	1	2					1
Minnesota	4					2			2
Mississippi	4		2						2
Missouri	4		3				1		
Montana	-								
Nebraska	3		2		1				
Nevada	-								
New Hampshire	3	1		1					1
New Jersey	12	1	5	2			1		3
New Mexico	1								1
New York	61	10	16	6	21				8
North Carolina	4	1	1	1					1
North Dakota	1	1							
Ohio	3	1	1	1					
Oklahoma	3	1		2					
Oregon	6	2	3			1			
Pennsylvania	13	1	12						
Rhode Island	1			1					
South Carolina	2								2
South Dakota	-								
Tennessee	3	1	2						
Texas	10			3		4			3
Utah	1	1							
Vermont	1								1
Virginia	4	1							3
Washington	5	1	1	1		1			1
West Virginia	2					2			
Wisconsin	5	2							3
Wyoming	-								
Puerto Rico	6	1	2			1			2
Virgin Islands	-								

*Excludes Public Health Service personnel on loan to States.
[a]Excludes Connecticut. [b]No report received.

Table 11. - Number of Air Analyses Performed in State Laboratories by State, Fiscal Year 1968

State	Number of Samples	Number of Analyses		Gamma Scan		Radiochemical Analyses	
		Gross Alpha	Gross Beta	Number of Analyses	Specific Nuclides Analyzed	Number of Analyses	Specific Nuclides Analyzed
Total	27,345	3,227	21,534	1,349		246	
Alabama	269		269				
Alaska							
Arizona							
Arkansas	312		312				
California	3,850	520	3,850	168	(a)	168	^{89}Sr, ^{90}Sr
Colorado	8			8	Nuclides of interest		
Connecticut*							
Delaware	270		270				
District of Columbia							
Florida	1,034		1,034				
Georgia	417		902				
Hawaii	780		780				
Idaho	1,500	1,500	1,500	4	^{131}I		
Illinois	630		630				
Indiana							
Iowa	651	118	411				
Kansas	365		365				
Kentucky	450		450				
Louisiana							
Maine							
Maryland	1,168		1,168				
Massachusetts	401		350	21	^{131}I	21	^{131}I
Michigan	1,080		1,702	[b]501	Gross Gamma		
Minnesota	51	51	51				
Mississippi							
Missouri							
Montana	70		70				
Nebraska	625	625	625				
Nevada							
New Hampshire							
New Jersey	30	30	30	30	Nuclides of interest		
New Mexico	6,000	6,000					
New York	721		(c)				
New York City	(d)	(d)	(d)				
New York Labor Dept.	57					57	^{3}H (Liquid Scint.)
North Carolina	701		701	154	(e)		
North Dakota	260		260				
Ohio	264			264	Gross gamma		
Oklahoma							
Oregon							
Pennsylvania							
Philadelphia	1,008		1,008				
Rhode Island	558	46	351	161	(f)		
South Carolina	326	172	326	14	Nuclides of interest		
South Dakota	365		365				
Tennessee							
Texas							
Utah	2,920		2,920				
Vermont	104		104				
Virginia	210		210				
Washington	325		325				
West Virginia	61	61	61				
Wisconsin	104	104	104	24	^{131}I, ^{140}Ba, ^{137}Cs, ^{40}K		
Wyoming							
Puerto Rico							
Virgin Islands							

*Data not available.

See notes on p. 63.

Table 12. - Number of Milk Analyses Performed in State Laboratories by State, Fiscal Year 1968

State	Number of Samples	Number of Analyses		Gamma Scan		Radiochemical Analyses	
		Gross Alpha	Gross Beta	Number of Analyses	Specific Nuclides Analyzed	Number of Analyses	Specific Nuclides Analyzed
Total	7,244	2,832	3,188	6,522		5,810	
Alabama	80			80	^{131}I, ^{137}Cs, ^{140}Ba, ^{40}K	160	^{89}Sr, ^{90}Sr
Alaska							
Arizona							
Arkansas	51			204	(a)	116	(b)
California	200		200	200	(c)	150	^{89}Sr, ^{90}Sr, Ca
Colorado	38			38	^{131}I, ^{137}Cs, ^{140}Ba		
Connecticut*							
Delaware	36					36	^{90}Sr
District of Columbia	56						
Florida	165			(d)165	^{131}I, ^{137}Cs, ^{140}Ba, ^{40}K	125	^{90}Sr
Georgia							
Hawaii	45			45	^{131}I, ^{137}Cs, ^{140}Ba	45	^{90}Sr
Idaho	115			83	^{131}I, ^{137}Cs	40	^{90}Sr
Illinois	50			50	^{131}I, ^{137}Cs	50	^{89}Sr, ^{90}Sr
Indiana	151			140	^{131}I, ^{137}Cs, ^{140}Ba, ^{40}K	12	^{89}Sr, ^{90}Sr
Iowa	120			120	^{131}I, ^{137}Cs, ^{40}K	120	^{90}Sr
Kansas	52			52	^{131}I, ^{137}Cs, ^{140}Ba, ^{40}K	52	Ca
Kentucky	30			30	^{131}I, ^{137}Cs, ^{140}Ba, ^{40}K	30	^{89}Sr, ^{90}Sr
Louisiana	180	180	180	(e)	^{131}I, ^{137}Cs, ^{140}Ba, ^{40}K	180	^{90}Sr
Maine	23		23	23	^{131}I, ^{137}Cs	23	^{89}Sr, ^{90}Sr
Maryland	53					265	(f)
Massachusetts	46			46	^{131}I, ^{137}Cs, ^{140}Ba		
Michigan	276			276	^{131}I, ^{137}Cs, ^{140}Ba, ^{40}K	131	^{90}Sr
Minnesota	133		131	133	^{131}I, ^{137}Cs	131	^{90}Sr
Mississippi							
Missouri							
Montana							
Nebraska	60			60	^{131}I, ^{137}Cs, ^{140}Ba, ^{40}K		
Nevada							
New Hampshire							
New Jersey	2,652	2,652	2,652	2,652	^{131}I, ^{137}Cs, ^{140}Ba	2,652	^{90}Sr
New Mexico							
New York	411			(e)	^{131}I,	(e)	^{89}Sr, ^{90}Sr, ^{3}H
New York City	52			52	^{131}I, ^{137}Cs	52	^{90}Sr
New York Labor Dept.							
North Carolina	171			171	^{131}I, ^{137}Cs, ^{140}Ba, ^{40}K	119	^{89}Sr, ^{90}Sr
North Dakota	315			315	^{131}I, ^{137}Cs, ^{140}Ba, ^{40}K	315	^{89}Sr, ^{90}Sr
Ohio	125			125	^{131}I, ^{137}Cs, ^{140}Ba, ^{40}K	11	^{89}Sr, ^{90}Sr
Oklahoma	62			62	^{131}I, ^{137}Cs		
Oregon	155			155	^{131}I, ^{137}Cs, ^{140}Ba	67	^{90}Sr
Pennsylvania	144			144	^{131}I, ^{137}Cs, ^{140}Ba, ^{40}K	60	^{90}Sr
Philadelphia	136		2	42	^{131}I	92	^{89}Sr, ^{90}Sr
Rhode Island							
South Carolina							
South Dakota							
Tennessee	96			96	^{131}I, ^{137}Cs, ^{140}Ba, ^{40}K	64	^{140}Ba, ^{89}Sr, ^{90}Sr, Ca
Texas	65			65	^{131}I, ^{137}Cs, ^{140}Ba, ^{40}K	65	^{90}Sr
Utah	442			442	^{131}I, ^{137}Cs, ^{140}Ba, ^{40}K	208	^{89}Sr, ^{90}Sr
Vermont	24			24	^{131}I		
Virginia	2					2	^{89}Sr, ^{90}Sr
Washington	98			98	(g)	91	^{90}Sr
West Virginia	12			12	^{131}I, ^{137}Cs	24	^{89}Sr, ^{90}Sr
Wisconsin	314			314	^{131}I, ^{137}Cs, ^{140}Ba, ^{40}K	314	^{90}Sr
Wyoming							
Puerto Rico	8			8	^{131}I, ^{137}Cs, ^{140}Ba, ^{40}K	8	^{89}Sr, ^{90}Sr
Virgin Islands							

*Data not available.

See notes on p. 63.

Table 13. - Number of Water Analyses Performed in State Laboratories by State, Fiscal Year 1968

State	Number of Samples	Number of Analyses		Gamma Scan		Radiochemical Analyses	
		Gross Alpha	Gross Beta	Number of Analyses	Specific Nuclides Analyzed	Number of Analyses	Specific Nuclides Analyzed
Total	14,642	15,786	15,977	3,054		968	
Alabama	496		496				
Alaska							
Arizona	100	100	100				
Arkansas	173	63	63	46	(a)		
California	600		600	60	(b)	60	^{89}Sr, ^{90}Sr
Colorado	570	540		10	Nuclides of interest	25	^{226}Ra
Connecticut*							
Delaware	173	173	173			5	^{226}Ra, ^{90}Sr
District of Columbia	304		304				
Florida	418	540	540	122	(c)		
Georgia	141			141	Nuclides of interest		
Hawaii	200		200			15	^{90}Sr
Idaho	130	130	130				
Illinois	2,000	2,000	2,000				
Indiana	258	516	516				
Iowa	1,502	1,374	1,502			20	^{3}H
Kansas	343	216	216	10	^{131}I, ^{137}Cs, ^{140}Ba, ^{40}K	41	^{89}Sr, ^{90}Sr, ^{226}Ra
Kentucky	400	400	400	140	Nuclides of interest	24	^{226}Ra, ^{90}Sr
Louisiana	252	252	252				
Maine	5	5		5	^{222}Rn		
Maryland	356	12	699				
Massachusetts	578	321	578				
Michigan	91	91	91				
Minnesota	903	903	820	144	(d)		
Mississippi							
Missouri	486	340	366			132	^{226}Ra, ^{90}Sr
Montana							
Nebraska							
Nevada							
New Hampshire							
New Jersey	1,447	1,447	1,447	1,447	^{131}I, ^{137}Cs, ^{140}Ba	20	^{226}Ra
New Mexico	200					200	^{226}Ra
New York	829		(e)	(e)	Nuclides of interest	(e)	^{89}Sr, ^{90}Sr, Pu, U, ^{3}H
New York City	2,172	2,172	2,172	12	Nuclides of interest		
New York Labor Dept.	9					9	^{3}H (Liquid Scint.)
North Carolina	354	382	354	282	(f)	13	^{89}Sr, ^{90}Sr, ^{226}Ra
North Dakota	73		73				
Ohio	239	39	239				
Oklahoma	100	100	100				
Oregon	526	526	526	110	(g)	61	^{32}P
Pennsylvania	1,058	1,058	1,058	20	Nuclides of interest		
Philadelphia	404	404	404				
Rhode Island	42	32	34	6	(h)		
South Carolina	516	516	516	80	(i)		
South Dakota							
Tennessee	141	140	140	39	^{131}I, ^{137}Cs, ^{140}Ba, ^{40}K		
Texas	10	2	2	8	^{226}Ra, ^{40}K		
Utah							
Vermont							
Virginia	125		185			28	^{89}Sr, ^{90}Sr
Washington	325		650	325	(j)	155	^{32}P
West Virginia	40	40	40	40	Nuclides of interest		
Wisconsin	192	192	180	5	^{131}I, ^{137}Cs, ^{140}Ba, ^{40}K	108	^{89}Sr, ^{90}Sr, ^{226}Ra
Wyoming	240	360	360				
Puerto Rico	3	3	3				
Virgin Islands							

*Data not available

See notes on p. 63.

Table 14. - Number of Food Analyses Performed in State Laboratories by State, Fiscal Year 1968

State	Number of Samples	Number of Analyses		Gamma Scan		Radiochemical Analyses	
		Gross Alpha	Gross Beta	Number of Analyses	Specific Nuclides Analyzed	Number of Analyses	Specific Nuclides Analyzed
Total	1,044	781	899	779		407	
Alabama							
Alaska							
Arizona							
Arkansas							
California	80		80	80	(a)	80	^{226}Ra, ^{89}Sr, ^{90}Sr, Ca
Colorado							
Connecticut*							
Delaware							
District of Columbia							
Florida	39	39	39	39	(b)		
Georgia							
Hawaii							
Idaho							
Illinois							
Indiana	10			10	(c)	10	^{226}Ra, ^{89}Sr, ^{90}Sr
Iowa							
Kansas							
Kentucky							
Louisiana	232	232	232	(d)	(e)	220	^{90}Sr
Maine	1		1	1	Nuclides of interest		
Maryland	21					42	^{89}Sr, ^{90}Sr
Massachusetts							
Michigan							
Minnesota							
Mississippi							
Missouri							
Montana							
Nebraska							
Nevada							
New Hampshire	18		18	18	Gross gamma		
New Jersey	506	506	506	506	^{131}I, ^{137}Cs, ^{140}Ba		
New Mexico							
New York							
New York City							
New York Labor Dept.							
North Carolina	4	4	4	4	(f)		
North Dakota							
Ohio							
Oklahoma							
Oregon	75			75	(g)	18	^{32}P
Pennsylvania							
Philadelphia							
Rhode Island							
South Carolina							
South Dakota							
Tennessee							
Texas	7		5	9	^{40}K, ^{103}Ru		
Utah							
Vermont							
Virginia	14		14				
Washington	37			37	^{106}Ru, ^{95}Zr, ^{65}Zn, ^{40}K	37	^{32}P
West Virginia							
Wisconsin							
Wyoming							
Puerto Rico							
Virgin Islands							

*Data not available.

See notes on p. 64.

Table 15. - Number of Smear Analyses Performed in State Laboratories by State, Fiscal Year 1968

State	Number of Samples	Number of Analyses		Gamma Scan		Radiochemical Analyses	
		Gross Alpha	Gross Beta	Number of Analyses	Specific Nuclides Analyzed	Number of Analyses	Specific Nuclides Analyzed
Total	7,352	4,640	4,319	1,069		327	
Alabama	656		656				
Alaska							
Arizona							
Arkansas	30	30	30	30	Nuclides of interest (a)		
California	250	100	250	50		50	^{3}H, ^{14}C, ^{32}P, ^{226}Ra
Colorado	101	101	101				
Connecticut*							
Delaware	7	7				7	^{226}Ra
District of Columbia	200	200	200				
Florida							
Georgia	268					268	^{3}H, ^{226}Ra
Hawaii							
Idaho	4	4	4				
Illinois							
Indiana	200	100	200	25	Nuclides of interest	2	^{65}Zn, ^{64}Cu
Iowa							
Kansas	77	40	37	77	^{226}Ra, ^{203}Hg, ^{60}Co, ^{99m}Te		
Kentucky	250	250	250	30	^{60}Co, ^{226}Ra		
Louisiana							
Maine	72		20	52	Nuclides of interest		
Maryland							
Massachusetts	3	3	3				
Michigan	107	70	152	1	Nuclides of interest		
Minnesota							
Mississippi							
Missouri							
Montana							
Nebraska							
Nevada							
New Hampshire	26	3	5	18	^{226}Ra, ^{137}Cs		
New Jersey	240	240	240				
New Mexico							
New York							
New York City	1,000	850	150				
New York Labor Dept.	2,544	1,637	1,247	672	Nuclides of interest		
North Carolina	85	85	85	24	Gross gamma		
North Dakota							
Ohio	12		12				
Oklahoma							
Oregon							
Pennsylvania	400	200	200				
Philadelphia	93	84	21	15	Gross gamma		
Rhode Island	129	129					
South Carolina	26	26	26	26	^{60}Co, ^{226}Ra, ^{222}Rn		
South Dakota							
Tennessee	275	275	275				
Texas	146	120	90	49	(b)		
Utah							
Vermont	50	50					
Virginia	63		63				
Washington							
West Virginia	36	36					
Wisconsin							
Wyoming	2		2				
Puerto Rico							
Virgin Islands							

*Data not available.
(a) ^{140}Ba, ^{137}Cs, ^{131}I, ^{54}Mn, ^{106}Ru-^{106}Rb, ^{95}Zr-^{95}Nb, ^{141}Ce, ^{144}Ce (b) ^{137}Cs, ^{134}Cs, ^{226}Ra, ^{192}Ir, ^{46}Sc, ^{60}Co

Table 16. - Number of Miscellaneous Analyses Performed in State Laboratories by State, Fiscal Year 1968

State	Number of Samples	Number of Analyses		Gamma Scan		Radiochemical Analyses	
		Gross Alpha	Gross Beta	Number of Analyses	Specific Nuclides Analyzed	Number of Analyses	Specific Nuclides Analyzed
Total	7,678	4,098	6,480	1,906		336	
Alabama							
Alaska							
Arizona							
Arkansas	187	4	4	187	(a)	8	^{240}Pu
California	1,358	386	1,358	351	(b)	74	(c)
Colorado	404			404	Nuclides of interest		
Connecticut*							
Delaware	168	168	168				
District of Columbia	78		78				
Florida	494	364	472	386	(d)		
Georgia	[e]63		63				
Hawaii							
Idaho							
Illinois							
Indiana							
Iowa	185	49	185				
Kansas	57	15	51		(f)		
Kentucky	35	35	35	35	Nuclides of interest	35	(g)
Louisiana							
Maine	125		240	10	Nuclides of interest		
Maryland							
Massachusetts	126		126				
Michigan	225		306				
Minnesota	54	50	54	11	(h)	4	^{90}Sr (Soil)
Mississippi							
Missouri							
Montana							
Nebraska							
Nevada							
New Hampshire							
New Jersey	[i]1,987	1,987	1,987	226	^{131}I, ^{137}Cs, ^{140}Ba		
New Mexico	70	70					
New York	294		(j)	(j)	Nuclides of interest	(j)	(k)
New York City						144	^{3}H (Liquid Scint.)
New York Labor Dept.	144						
North Carolina	234	2	234	17	(l)	2	^{89}Sr, ^{90}Sr (Silt)
North Dakota							
Ohio	77		77				
Oklahoma							
Oregon	144			144	(m)		
Pennsylvania	54	106	106	5	^{232}Th (Slag)	38	(n)
Philadelphia	48	48	48				
Rhode Island	44	4	28	12	(o)		
South Carolina	8	8	8	8	Nuclides of interest		
South Dakota							
Tennessee	86	61	61	25	U, Th	25	U
Texas	6	3	5	3	(p)	3	(q)
Utah	364	364	364				
Vermont							
Virginia	109		109				
Washington	73		73	73	(r)		
West Virginia							
Wisconsin	134	134					
Wyoming	240	240	240				
Puerto Rico	3					3	(s)

*Includes precipitation, vegetation (grass samples) soil, silt, mud, algae, aguatic biota, sewage, etc.
**Data not available.

See notes on pp. 64-65.

NOTES

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(a) ^{140}Ba, ^{54}Mn, ^{95}Zr-^{95}Nb, ^{137}Cs, ^{106}Ru-^{106}Rb, ^{141}Ce, ^{144}Ce.

(b) Charcoal filters.

(c) Number of analyses not available.

(d) Collected, counted, and recorded continuously.

(e) ^{131}I, ^{106}Ru, ^{137}Cs, ^{95}Zr-^{95}Nb, ^{140}Ba, ^{144}Ce.

(f) ^{144}Ce, ^{105}Ru, ^{54}Mn, ^{137}Cs, ^{125}Sb, ^{65}Zn, ^{60}Co, ^{40}K, ^{131}I, ^{140}Ba.

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(a) ^{40}K, ^{140}Ba, ^{131}I, ^{106}Ru, ^{144}Ce, ^{95}Zr, ^{65}Zn.

(b) ^{226}Ra, ^{222}Rn, Th, U, ^{89}Sr, ^{90}Sr

(c) ^{40}K, ^{140}Ba, ^{131}I, ^{137}Cs

(d) Forty of these samples are analysed for ^{131}I using ion exchange cartridge.

(e) Number of analyses not available.

(f) ^{131}I, ^{137}Cs, ^{89}Sr, ^{90}Sr, ^{140}Ba

(g) ^{131}I, ^{137}Cs, ^{140}Ba, ^{40}K, ^{65}Zn

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(a) ^{131}I, ^{40}K, ^{106}Ru, ^{140}Ba, ^{144}Ce, ^{226}Ra, ^{222}Rn, ^{95}Zr, ^{65}Zn, Th, U.

(b) ^{40}K, ^{137}Cs, ^{54}Mn, ^{106}Ru-^{106}Rb, ^{95}Zr-^{95}Nb, ^{141}Ce, ^{144}Ce.

(c) ^{144}Ce, ^{137}Cs, ^{65}Zn, ^{131}I, ^{95}Zr, ^{40}K, ^{106}Ru, ^{54}Mn, ^{140}Ba.

(d) ^{131}I, ^{137}Cs, ^{51}Cr, ^{54}Mn, ^{58}Co, ^{60}Co, ^{133}Xe, ^{134}Cs.

(e) Number of analyses not available.

(f) ^{144}Ce, ^{106}Ru, ^{95}Zr-^{95}Nb, ^{54}Mn, ^{214}Bi, ^{131}I, ^{137}Cs, ^{40}K, ^{140}Ba.

(g) ^{51}Cr, ^{103}Ru, ^{106}Ru, ^{95}Zr-^{95}Nb, ^{65}Zn.

(h) ^{144}Ce, ^{105}Ru, ^{54}Mn, ^{95}Zr, ^{65}Zn, ^{60}Co, ^{131}I, ^{137}Cs, ^{40}K, ^{140}Ba.

(i) ^{60}Co, ^{51}Cr, ^{65}Zn, ^{54}Mn, ^{106}Ru, ^{141}Ce, ^{137}Cs.

(j) ^{51}Cr, ^{106}Ru, ^{95}Zr, ^{65}Zn, ^{46}Sc.

NOTES (cont)

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(a) ^{40}K, ^{95}Nb, ^{54}Mn, ^{140}Ba, ^{65}Zn, ^{137}Cs, ^{106}Ru-^{106}Rb, ^{131}I, ^{141}Ce, ^{144}Ce.

(b) ^{144}Ce, ^{137}Cs, ^{65}Zn, ^{131}I, ^{95}Zr, ^{40}K, ^{106}Ru, ^{54}Mn, ^{140}Ba.

(c) ^{131}I, ^{140}Ba, ^{137}Cs, ^{40}K, ^{95}Zr-^{95}Nb, ^{106}Ru, ^{54}Mn, ^{144}Ce.

(d) Number of analyses not available.

(e) ^{144}Ce, ^{131}I, ^{106}Ru, ^{137}Cs, ^{54}Mn, ^{65}Zn, ^{40}K, ^{140}Ba.

(f) ^{144}Ce, ^{131}I, ^{106}Ru, ^{137}Cs, ^{95}Zr-^{95}Nb, ^{65}Zn, ^{40}K, ^{140}Ba.

(g) ^{103}Ru, ^{106}Ru, ^{95}Zr-^{95}Nb, ^{65}Zn.

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(a) Silt--^{131}I, ^{40}K, ^{106}Ru, ^{140}Ba, ^{144}Ce, ^{226}Ra, ^{222}Rn, ^{95}Zr, ^{65}Zn, Th, U.

(b) Rain, fallout and soil--^{140}Ba, ^{137}Cs, ^{54}Mn, ^{106}Ru-^{106}Rb, ^{95}Zr-^{95}Nb, ^{141}Ce, ^{144}Ce, ^{131}I; Special study samples--^{65}Zn, ^{60}Co, ^{59}Fe, ^{51}Cr, ^{64}Cu.

(c) Fallout--^{89}Sr, ^{90}Sr; Soil--^{226}Ra, Th, ^{89}Sr, ^{90}Sr.

(d) Vegetation, soil, silt, sewage--^{144}Ce, ^{137}Cs, ^{65}Zn, ^{131}I, ^{95}Zr, ^{40}K, ^{106}Ru, ^{54}Mn, ^{140}Ba.

(e) Plus 1,200 film badges.

(f) Precipitation, soil--^{131}I, ^{137}Cs, ^{140}Ba.

(g) Vegetation, soil, silt--^{226}Ra, ^{90}Sr.

(h) Precipitation--^{103}Ru, ^{144}Ce, ^{144}Pr, ^{95}Zr-^{95}Nb; Soil--^{137}Cs.

(i) Plus 240 film badges.

(j) Number of analyses not available.

(k) Fallout, precipitation--^{89}Sr, ^{90}Sr, ^{3}H.

NOTES (cont)

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(l) Rain, Fallout--nuclides of interest; silt--^{144}Ce, ^{131}I, ^{106}Ru, ^{137}Cs, ^{95}Zr-^{95}Nb, ^{54}Mn, ^{232}Th, ^{65}Zn, ^{60}Co, ^{40}K, ^{140}Ba, ^{214}Bi.

(m) Algae and Sediments--^{51}Cr, ^{103}Ru, ^{106}Ru, ^{95}Zr-^{95}Nb, ^{65}Zn, ^{54}Mn, ^{60}Co.

(n) Vegetation, soil and urine--^{90}Sr; slag--^{232}Th, ^{226}Ra.

(o) ^{144}Ce, ^{105}Ru, ^{54}Mn, ^{137}Cs, ^{95}Zr, ^{65}Zn, ^{60}Co, ^{40}K, ^{131}I, ^{140}Ba.

(p) Precipitation--nuclides of interest; ^{226}Ra.

(q) Precipitation--^{90}Sr; ^{226}Ra.

(r) Precipitation--gross gamma; sediment--^{40}K, ^{95}Zr.

(s) Vegetation--^{89}Sr, ^{90}Sr.

APPENDIX B

Appendix B - Radiological Health Personnel Assigned to State and Local Health Agencies, Fiscal Year 1968

Title or Specialty	Degree(s)	Area of Performance**	Percent of Total Time
ALABAMA			
Chief, Div. of Radiological Health	BS, MS (Eng.)	A, B1, B2, B3	50
Radiation Physicists (7)	BS, MS (Chem.)	A, B2, B3, B5	100
	BS (Chem.)	A, B2	100
	BS (Rad. Phys.)	B1, B3	100
	BS (Rad. Phys.)	B1, B4	100
	BS (Chem.)	B2	100
	BS (Chem.)	B2	100
	BS (Rad. Phys.)	B3	100
Radiation Safety Specialists (2)	...	B1, B4	100
	...	B1	100
Laboratory Technician	...	B2	100
JEFFERSON COUNTY, ALABAMA			
Sr. Radiological Health Inspector	...	A, B1	100
Air Pollution Control Engineer and Radiological Health Supervisor	BS (Mech. Eng.)	A, B1	25
Radiological Health Inspector	...	B1	100
ALASKA			
PHS Assignee	BS	All	100
ARIZONA			
Radiation Control Engineer Atomic Energy Commission	BS, MS, MPH	A, B2, B3, B4, B5	100
Sanitarian	...	B1, B4, B5	100
Health Physicist	BS	B3	100
ARKANSAS			
Dir., Div. of Radiological Health	BS, MPH (Chem.)	A, B1, B2, B3	100
Asst. Dir., Div. of Radiological Health	BS, MS (Phys.)	A, B1, B2, B3	100
Health Physicists II (4)	BS (Chem.)	A, B1, B2, B3	100
	BS, MS (Phys.)	B1, B3	100
	BS (Math.)	B1, B3	100
	BS (Biol.)	A, B3	100
Chief Chemist	BS, MPH (Chem.)	A, B2	100
Chemist II	BS (Chem.)	B2	15
Chief Electrician	...	A, B3	100
Electronic Technicians (4)	...	B3	100

*Personnel who spend less than 15% of their working time in Radiological Health are not included.

**A, Basic Planning and Administration; B1, X-ray Survey and Control; B2, Environmental Surveillance; B3, Radioactive Materials; B4, Electronic Products; B5 Other Radiological Health Activities; All, all areas of performance.

Appendix B - (Continued)

Title or Specialty	Degree(s)	Area of Performance*	Percent of Total Time
ARKANSAS (cont)			
Technician	...	B2	50
CALIFORNIA			
Chief, Bu. of Radiological Health	PhD (Chem.)	A, B1, B2, B3	100
Supervising Health Physicist	BA (Chem.)	A, B1, B2, B3	100
Senior Health Physicists (4)	BS	A, B1, B3	100
	BS, MS (Chem. Eng.)	A, B2	100
	BS (Bact.)	A, B1, B2, B3	100
	AB (Phys.)	A, B3	100
Associate Health Physicists (6)	BS (Chem.)	B1, B3	100
	MS (Hlth. Phys.)	B1, B3	100
	MS (Chem.)	B3	100
	BA (Nat. Sc.)	B1, B3	100
	BS (Life Sc.)	B1, B2, B3	100
	BS (Phys.)	B3	100
Asst. Chief (Administration)	AB (Ind. Rel.)	A, B1, B2, B3	100
Assoc. Public Health Statistician	AB (Psych.)	B1, B2, B3	100
Health Education Consultant	MPH (Hlth. Ed.)	A, B1, B2, B3	100
Radiation Protection Specialists (7)	BA (Math.)	B1	100
	...	B1	100
	BS (Zool.)	B1	100
	BS (Educ.)	B1	100
	...	B1	100
	...	B1	100
	...	B1	100
Chief, Sanitation & Radiation Lab.	BS, MS (Eng.)	B2	50
Asst. Ch., Sanitation & Radiation Lab.	PhD (Microbiology)	B2	50
Research Radiochemist	BS (Chem.)	B2	100
Public Health Chemists (2)	BA (Chem.)	B2	100
	BS (Chem.)	B2	100
Asst. Public Health Chemist	BA (Chem.)	B2	100
Associate Radiochemist	BS, MS (Chem.)	B2	100
Electronic Specialist	BS	B2	100
Laboratory Technician Assistants (2)	...	B2	100
	...	B2	100
Laboratory Assistant	...	B2	100

*See footnotes at beginning of table.

Appendix B - (Continued)

Title or Specialty	Degree(s)	Area of Performance*	Percent of Total Time
CALIFORNIA DEPT. OF INDUSTRIAL RELATIONS			
Senior Health Physicists (2)	BME	A, B1, B3	100
Assoc. Health Physicists (3)	AB (Chem.)	B1, B3	100
	BS, MS (Bioradiology)	B1, B3	100
	BS (Biol.)	B1, B3	100
ALAMEDA COUNTY, CALIFORNIA			
Public Health Physicist	BS (Chem.)	A, B1, B2, B3	100
Radiation Control Specialist	BS	B1	100
LOS ANGELES COUNTY, CALIFORNIA			
Head Public Health Radiation Physicist	BS (San. Eng.)	A, B1, B3	100
Sr. Radiation Physicist	BS (Eng.)	A, B1, B3	100
Public Health Radiation Physicists (2)	BS (Phy. Sc.)	B3	100
	BA (Phys.)	B3	100
Radiation Protection Specialists (4)	BS	B1	100
	...	B1	100
	AS (Nat. Sc.)	B1	100
	...	B1	100
ORANGE COUNTY, CALIFRONIA			
Public Health Physicist	BS (Educ.)	A, B1, B2, B3	100
Radiation Control Specialist	BS	B1	100
VERNON (CITY), CALIFORNIA			
Director, Environmental Health	...	B1, B3	25
COLORADO			
Dir., Air, Occupational & Radiation Hygiene Division	MD, MPH	A	25
Chief, Radiological Health Section	BS (Chem.)	All	100
Sr. Radiological Health Specialist	BS, MPH	A, B2, B3, B4, B5	100
Radiological Health Specialists (2)	BS	B2, B3, B5	100
	DVM	B1, B2, B3, B4	100
Laboratory Technician	...	B2	100
Health Physicist	BS	B1	25
Sanitarians (2)	BS, MS (Eng.)	A, B1, B3, B4	50
	BS	A, B1	100

*See footnotes at beginning of table.

Appendix B - (Continued)

Title or Specialty	Degree(s)	Area of Performance*	Percent of Total Time
CONNECTICUT			
Data Not Available			
DELAWARE			
Radiation Safety Officer	BA (Biol.)	All	100
Analytical Chemist	BS (Biol.)	A, B2, B5	100
DISTRICT OF COLUMBIA			
Chief, Radiological Health Div.	MS (Hlth. Phys.)	A, B1, B3, B5	100
Health Physicists (2)	...	All	100
	BS (Phys.)	All	100
Chemist	BS (Chem.)	B2, B3	100
FLORIDA			
Dir., Div. of Radiological Health	BS, MD, DTM, DTH	A	100
Actg. Dir., Radiological Health Lab.	BS, MS (Chem.)	B2	100
Chief Public Health Physicist	BS (Hlth. Phys.)	A, B1, B2, B3, B5	100
Public Health Physicists (9)	AB, BS, MS (Hlth. Phys.)	A, B1, B3	100
	BS (Chem.)	B3	100
	AB, MS, MPH (Hlth. Phys.)	B1, B3, B4	100
	BS (Hlth. Phys.)	B3, B5	100
	BS, MPH (Hlth. Phys.)	A, B1, B2, B3, B4	75
	BS, MPH (Hlth. Phys.)	A, B1, B2, B3, B4	75
	BS (Phys.)	B1, B2, B3	30
	...	B5	100
	...	B1, B3	100
PHS Mobilization Coordinator	...	B1, B4	50
Sanitarian	...	B1	25
Laboratory Technician	...	B2	100
GEORGIA			
Dir., Radiological Health Service	AB, MS (Chem.)	A	100
Chief, X-ray Control Section	BS, MRH (Phys.)	A, B1	100
Ch., Radioactive Materials Control Sec.	BS, MS (Chem.)	A, B3	100
Radiation Safety Officers (5)	BS, MRH (Phys.)	B1	100
	BS (Biol.)	B1	100
	BS (Biol.)	B3	100
	BS, MS (Biol.)	B1	100
	BS (Biol.)	B3	100

*See footnotes at beginning of table.

Appendix B - (Continued)

Title or Specialty	Degree(s)	Area of Performance*	Percent of Total Time
GEORGIA (cont)			
Radiological Health Technicians (2)	...	B2	100
HAWAII			
Chief, Occupational & Radiological Health Branch	BS, MS (Chem.)	A, B1, B2, B3	50
Radiological Health Inspector	...	B1, B2, B3, B4	100
Industrial Hygiene Chemists (2)	BS, MS (Chem.)	B2	100
	BS (Chem.)	B2, B3	15
Industrial Hygiene Engineer	...	B2	25
IDAHO			
Radiological Health Officer	MS (Eng.)	A, B1, B2, B3	50
Engineer	MS (Eng.)	A, B1, B2, B3, B5	100
Chemist	BS (Chem.)	B2	75
Radiological Health Specialist	MS	All	100
ILLINOIS			
Sanitary Engineers (3)	...	A, B1, B2, B3, B4	100
	BSCE, MPH	A, B1, B2, B3, B4	100
	BS (San. Eng.)	A, B1, B3	100
Radiation Detection Supervisors (4)	...	A, B1, B2, B3, B4	100
	...	B1, B3	100
	...	B1, B3	100
	...	B1, B3	100
Radiation Detection Technicians (7)	...	B1	100
	...	B1, B3	100
	...	B1	100
	...	B1, B3	100
	...	B1	100
	...	B1	100
	...	B1, B3	100
INDIANA			
Dir., Bureau of Engineering	BSChE	A	20
Dir., Division of Radiological Health	BSCE, MS	All	100
General Physician	BS, MD	A, B1, B3	15
Radiological Scientist	BS	All	100
Public Health Sanitarian	AB	B1	100
Chemist	AB	B2	100

*See footnotes at beginning of table.

Appendix B - (Continued)

Title or Specialty	Degree(s)	Area of Performance*	Percent of Total Time
IOWA			
Dir., Industrial Environment Division	PhD (Chem. Eng.)	All	30
Associate Laboratory Director	PhD (Chem.)	A, B1, B2, B3	30
Health Physicist	BS (Phys.)	A, B1, B2, B3, B5	100
Health Physics Techincian	...	B1, B2	100
Laboratory Technician	...	A, B2	100
KANSAS			
Chief Engineer and Director, Environmental Health Services	BSCE, MS	A	15
Chief, Radiological Health Section (PHS Assignee)	BS, MPH (Pharm.)	All	100
Chief Public Health Physicist	BS (Pharm.)	All	100
Public Health Physicists (4)	BS, MS (Chem.)	A, B1, B2, B3, B5	100
	BS (Chem.)	All	100
	BS (Chem.)	All	100
	BS, MS (Rad. Biophys.)	A, B1, B5	33
Chemists (2)	BA (Chem.)	B2, B5	50
	BS (Chem.)	B2, B5	50
KENTUCKY			
Dir., Radiological Health	AB (Hlth. Phys.) MSPH	A, B3, B4	100
Asst. Dir., Radiological Health	BS (Hlth. Phys.) MSPH	A, B3, B4	100
Senior Radiation Physicist	BS (Hlth. Phys.)	B3	100
Radiation Physicists (2)	BS (Hlth. Phys.)	B2	100
	BS (Hlth. Phys.)	B1	100
Associate Radiation Physicist	BS (Hlth. Phys.)	B1	100
Public Health Technician	...	B2	100
PHS Assignee	BSCE, MSS	A, B1, B2, B3, B4	100
LOUISIANA			
Chief, Occupational Health & Safety Section	BS, MS	A, B2, B3, B4, B5	75
Public Health Engineers (4)	BSCHE, MPH	B2	20
	BSCE, MPH	B2	20
	BSME, MSE	B2	20
	BS, MPH	B2	20

*See footnotes at beginning of table.

Appendix B - (Continued)

Title or Specialty	Degree(s)	Area of Performance*	Percent of Total Time
LOUISIANA (cont)			
Industrial Hygienist	BSChE	B2	20
Engineer	BSChE	A, B2	67
Sanitarian	BS, MPH	A, B2, B3, B4, B5	100
Chemists (3)	BS	B2	100
	BS	B2	25
	BS	B2	25
LOUISIANA BOARD OF NUCLEAR ENERGY			
Dir., Div. of Radiation Control	PhD, BS, MS	A, B1, B3, B5	100
Asst. Dir., Div. of Radiation Control	BS, MS	A, B1, B3, B5	100
Engineer	BS	B1, B3, B5	100
Health Physicists (3)	BS, MS	B1, B3, B5	100
	BS	B1, B3, B5	100
	BS	B1, B3, B5	100
MAINE			
Industrial Hygiene Engineer II	BS, MS (Chem. Eng.)	A, B1, B2, B3, B5	50
Chemist	BA (Chem.)	B2, B3	100
MARYLAND			
Dir., Bureau of Consumer Protection	BS, MS, MPH	A	20
Radiation Health Specialists (3)	BS (Hlth. Phys.)	A	100
	BS (Phys.)	B1, B4	100
	BS (Ind. Mgt.)	B2, B3, B4	100
Health Physicists (3)	BS (Biol.)	B1	100
	BS (Biol.)	B1	100
	BA	B1	100
Laboratory Scientists (2)	BS (Chem.)	B2	100
MASSACHUSETTS			
Asst. to the Commissioner (Rad. Hlth.)	BS, MS (Hlth. Phys.)	All	100
Dir., Div. of Sanitary Engineering	MS (Ind. Hyg.), MS (Hlth. Phys.)	A	20
Asst. Dir., Div. of Dental Health	DMD	A, B1	25
Dir., Div. of Hospital Facilities	MD, MPH	A	25
Chief of Laboratory (Lawrence)	MS (Chem.)	B2	25
Chief of Laboratory (Boston)	BS (Chem.)	A	15
Sanitary Engineer	MS (Eng.)	A, B2, B3, B4, B5	50

*See footnotes at beginning of table.

Appendix B - (Continued)

Title or Specialty	Degree(s)	Area of Performance*	Percent of Total Time
MASSACHUSETTS (cont)			
Asst. Sanitary Engineer	...	B2	20
Senior Chemists (3)	BS (Chem.)	B2	100
	BS (Chem.)	B2	100
	BS, MS (Chem.)	B2	25
Assistant Chemist	BS (Chem.)	B2	20
Chief X-ray Technician	...	B1	100
X-ray Technician	...	B1	100
Radiation Control Inspectors (2)	...	B1	100
Radiation Scientist	BS (Rad. Sc.)	B2, B3	100
MICHIGAN			
Chief, Radiation Health Section	AB (Chem. Eng.)	A, B1, B2, B3, B5	100
Radiological Health Engineer	BS (Eng.)	B1, B2, B3	100
Health Physicists (2)	BS (Chem.)	B1, B3,	100
	BS (Phys.)	B1, B3	100
Chemist	BS (Chem.)	B2	100
DETROIT, MICHIGAN			
Dir., Bureau of Industrial Hygiene	ScD	A	20
Associate Industrial Hygienists (2)	...	A11	100
	PhD (Chem.)	B5	15
Industrial Hygienist	MPH	B5	15
MINNESOTA			
Public Health Physician	BSChE, MPH, MD	A	25
Radiation Control Supervisor	BSME, MS (Geol.)	A11	100
Laboratory Director of Chemistry	BA (Chem.)	B2	15
Sr. Public Health Engineer	BSChE, MPH	B2	50
Radiation Technicians (3)	BA (Biol.)	B1, B2, B3	100
	BS (Biol.)	B1, B2	100
	BS (Math.)	B1, B2, B3	100
Research Analyst	BA (Phys.)	B2	25
MISSISSIPPI			
Supervisor, Radiological Health Unit	BS (Math.)	A11	100
Health Physicist and Assistant Supervisor	BS	A11	100

*See footnotes at beginning of table.

Appendix B - (Continued)

Title or Specialty	Degree(s)	Area of Performance*	Percent of Total Time
MISSISSIPPI (cont)			
Health Physicists (2)	BS (Phys.)	B1, B2, B3, B4, B5	100
	BS (Phys.)	B1, B2, B3, B5	100
MISSOURI			
Radiological Health Officer	MD	A, B1, B3, B5	100
Dental Health Consultant	DDS	A, B1	20
Sanitary Engineer	PE, MPH	A, B3, B5	15
Radiological Health Analysts (3)	BS (Phys.)	A, B1, B2, B3, B5	100
	BS (Phys.)	B1, B3, B5	100
	BS (Phys.)	B1, B3, B5	100
Sanitarian	BS	B1	20
Chemist	BS (Chem.)	B2	25
MONTANA			
Coordinator, Radiological Health Program (PHS Assignee)	MS	All	100
Chemist	PhD	B3	25
NEBRASKA			
Director of Radiological Health	BA, MS (Hlth. Phys.)	A, B1, B2, B3, B4	100
Radiological Health Specialist	BS, MS (San. Sc.)	B1	100
Health Physicist	BS, MS	A, B1, B3, B5	100
PHS Assignee	DDS, MS	A, B1, B2, B3	100
NEVADA			
Public Health Engineer	BS, MS	A, B1, B2, B3, B4	20
NEW HAMPSHIRE			
Dir., Radiation Control Agency	BS (Ind. Hyg. Eng.)	A	33
Engineer	BS (Agr. Eng.)	B1, B2, B3, B4	100
Chemist	BS (Chem.)	B1, B2, B3, B4	100
Radiation Technician	BS	B1, B2, B4	100
NEW JERSEY			
Chief, Radiological Health Program	BS, MPH	A	100
Asst. Chief, Radiological Health Program	BS (Biol.)	A, B1, B3, B4, B5	100
Nuclear Engineer	BS (Phys.), MS (Nuc. Eng.)	A, B5	100

*See footnotes at beginning of table.

Appendix B - (Continued)

Title or Specialty	Degree(s)	Area of Performance*	Percent of Total Time
NEW JERSEY (cont)			
Research Scientist	PhD (Educ.)	A, B2	100
Radiation Physicists (6)	BS, MS (Nuc. Sc.)	B3	100
	BS (Hlth. Phys.)	B1	100
	MD	B1	100
	BS, MS (Nuc. Sc.)	B2, B3	100
	...	B1	100
	BS (Phys.)	B2, B3, B4, B5	100
Senior Statistician	BS (Educ.)	B1, B2, B3, B4, B5	100
Senior Chemist	BS (Chem.)	B2	100
Supervising X-ray Technician	...	B1	100
Laboratory Technician	...	B2	100
NEW MEXICO			
Chief, Radiological & Occupational Health & Air Pollution Section	BS, MPH	All	50
Supervisor, Radiological Health Unit	BS (Geol.)	All	100
Health Laboratory Scientist	BS	B2	75
Public Health Engineer	BA, BS, MS (Chem. Eng.)	A, B2, B3	20
Laboratory Assistant	...	B2	75
NEW YORK			
Bureau of Radiological Health			
Special Asst. to the Commissioner of Health	MD	B3, B5	70
Chief, Radiological Service Section	BCE, MSCE	A, B2, B3, B4, B5	100
Chief, X-ray Service Section	BSCE	A, B1, B4	100
Assoc. Radiological Hlth. Specialists (3)	BSCE	B1, B3	100
	BS, MPH	B3	100
	BS, MS	B1, B3	100
Asst. Sanitary Engineers (2)	BSCE, MSCE	B2, B5	100
	BSCE, MSCE	B2, B3	100
Sr. Sanitary Engineer	BSCE, ME	A, B1, B2, B3, B5	100
Electronic Technician	...	B1, B2, B3, B5	100
Division of Laboratories and Research			
Associate Research Scientist	BS (Chem.)	A	100
Senior Research Scientists (2)	BS (Chem.)	B2	100
	BS (Electronics)	B2	100

*See footnotes at beginning of table.

Appendix B - (Continued)

Title or Specialty	Degree(s)	Area of Performance*	Percent of Total Time
NEW YORK (cont)			
Division of laboratories and Research (cont)			
Senior Sanitary Chemist (2)	BS, MS (Chem.)	B2	100
	BS (Chem.)	B2	100
Sanitary Chemists (2)	BS (Chem.)	B2	100
Chemist	BS (Chem.)	B2	100
Senior Biophysicist	BS (Phys.)	B1	100
Electronic Technicians (2)	...	B2	100
Senior Laboratory Technicians (6)	...	B2	100
Laboratory Technicians (5)	...	B1, B2	100
	...	B2	100
	...	B2	100
	...	B2	100
	...	B2	100
Senior Statistical Clerk	...	B2	100
NEW YORK BUREAU OF X-RAY TECHNOLOGY			
Dir., Bureau of X-ray Technology	...	A, B1, B5	100
Asst. Dir., Bu. of X-ray Technology	BA	A, B1, B5	100
Investigators, Bureau of X-ray Technology (2)	...	B1, B5	100
NEW YORK CITY			
Dir., Office of Radiation Control	EE, PE	A	100
Asst. Dir., Office of Radiation Control	BS, PE	A	100
Special Assistant to the Director	BS	A, B1, B5	100
Chief, Physics Division	BA (Hlth. Phys.)	All	100
Senior Physicist	BS, MS (Hlth. Phys.)	A, B1, B2, B3, B5	100
Assistant Scientist	BS, MS (Phys.)	B1, B2, B3, B5	100
Asst. Director for Licensing	BS, PodD	A, B3	100
Radioactive Materials Coordinator	BS	B3	100
Chief, Radiation Inspection Division	BS	A, B1	100
Supervisors, Radiation Inspection Division (3)	BS	B1	100
	BS	B1	100
	BS	B1	100

*See footnotes at beginning of table.

Appendix B - (Continued)

Title or Specialty	Degree(s)	Area of Performance*	Percent of Total Time
NEW YORK CITY (cont)			
Radiation Inspectors (11)	PodD	B1	100
	...	B1	100
	PodD	B1	100
	BS	B1, B3	100
	BS	B1, B3	100
	BS	B1, B3	100
	BS	B1	100
	BS	B1	100
	BS, PodD	B1	100
	BS	B1	100
	PodD	B1	100
Radioactive Materials Inspectors (3)	BS	B3	100
Laboratory Aide	...	B1, B2, B3, B5	100
NEW YORK DEPARTMENT OF LABOR			
Principal Radiophysicist	PhD (Nuc. Phys.)	A, B1, B2, B3, B5	100
Associate Radiophysicists (2)	BS (Hlth. Phys.)	A, B1, B2, B3, B5	100
	...	A, B2, B3, B5	100
Senior Radiophysicists (4)	...	B1, B2, B3, B5	100
	...	B1, B2, B3, B5	100
	...	B1, B2, B3, B5	100
	BS (Hlth. Phys.)	B1, B2, B3, B5	100
Radiophysicists (2)	BS (Hlth. Phys.)	B1, B2, B3, B5	100
	...	B1, B2, B3, B5	100
Associate Radiochemist	BS	B2	100
Radiochemist	...	B2	100
NORTH CAROLINA			
Dir., Radiation Protection Program	BS, MS	A, B1, B2, B3, B4	100
Engineer	BS, MS	A, B1, B2, B3	100
Radiation Supervisor	BS	A, B1, B3, B5	100
Electronic Technicians (2)	...	B5	100
Radiation Protection Inspectors (2)	...	B1	100
	AA	B1	100
Chemists (2)	BS (Chem.)	B2	30
	BS (Chem.)	B2	100
Technician	...	B2	100
PHS Assignee	BSCE	A11	100

*See footnotes at beginning of table.

Appendix B - (Continued)

Title or Specialty	Degree(s)	Area of Performance*	Percent of Total Time
NORTH DAKOTA			
Dir., Div. of Environmental Engineering	BSME, MPH	All	85
Chemist, Radiation Surveillance Unit	BA, MPH	A, B2, B3, B5	100
Laboratory Technicians (2)	...	B5	44
	...	B5	56
PHS Assignee	BA, MSSPH	A, B1, B2, B3	100
OHIO			
Engineer-in-Charge, Radiological Health Unit	BS, MS (ChE.)	All	100
Asst.-in-Charge, Radiological Health Unit	BS (Hlth. Phys.)	All	100
Technician	...	B1, B2, B4, B5	100
Chief Chemist	BS, MS (Chem.)	B2	20
Chemist	BS (Chem.)	B2	100
OKLAHOMA			
Dir., Div. of Occupational and Radiological Health	BSChE, MPH	A, B4, B5	50
Engineers (2)	BSChE	B1, B2, B3, B4, B5	100
	BS, MS (Eng.)	A, B1, B3	100
Assistant Chemist	BS (Chem. & Biol.)	B1, B3	100
Laboratory Technicians	...	B2	50
OREGON			
Dir., Radiological Health Section	DVM	All	100
Industrial Hygienists (3)	BS	A, B1, B3, B4	100
	BS	A, B1, B3	100
	...	A, B1	100
Chief Radiochemist	BS	A, B2	100
Radiochemist	BS	A, B2	100
PENNSYLVANIA			
Chief, Radiological Health Section	BS (Hlth. Phys.)	A, B3, B4	100
Radiation Health Physicists (5)	BSCE, MS	A, B1, B3, B4	100
	BS, MS	A, B1, B3, B4	100
	MS	A, B1, B3, B4	100
	BS, MS	A, B1, B3, B4	100
	MS	A, B1, B2, B3	100

*See footnotes at beginning of table.

Appendix B - (Continued)

Title or Specialty	Degree(s)	Area of Performance*	Percent of Total Time
PENNSYLVANIA (cont)			
Associate Radiological Health Physicists (3)	BS	B1, B3	100
	BS	B1, B3	100
	MA	B1, B3	100
Chemist	BS	B2	100
Laboratory Technician	...	B2, B3	100
X-ray Technician	...	B1	50
PHILADELPHIA, PENNSYLVANIA			
Chief, Occupational and Radiological Health Section	AB, BS, MS	A, B1, B2, B3, B5	70
Asst. Chief, Occupational and Radiological Health Section	BS, MPH	B2	25
Sanitarians (4)	BS (Hlth. Phys.)	B1, B3	100
	BS, MS (Hlth. Phys.)	A, B1	100
	BS (Hlth. Phys.)	B1	25
	BS (Hlth. Phys.)	A, B1, B2, B3	100
Chemical Technician	...	B2	90
Physicist	...	B1, B2	100
Chemist	PhD	B2	60
Consultant	BS, MS (Elec. E.)	B1, B3	30
Radiological Health Technician	...	B1	100
RHODE ISLAND			
Chief, Div. of Occupational Health	MD	A, B5	15
Radiological Health Specialist	MS (Ind. Hyg. Eng.)	All	100
Occupational Health Specialist	BS (Chem.)	A, B1, B2, B3	75
Chemist (Industrial Hygiene)	MS (Chem.)	B2	25
Sanitarians (2)	...	B2	20
	BPH	B2	20
Sanitary Aide	...	B2	20
SOUTH CAROLINA			
Chief, Bu. of Environmental Eng. and Executive Dir., S.C. Pollution Control Authority	BS, MS	A	15
Radiological and Industrial Engineer	BS, MPH	A, B1, B2, B3	50

*See footnotes at beginning of table.

Appendix B - (Continued)

Title or Specialty	Degree(s)	Area of Performance*	Percent of Total Time
SOUTH CAROLINA (cont)			
Laboratory Technicians (3)	...	B1, B2, B3, B4	100
	...	B2	100
	...	B2	100
Radiological Health Specialist	BS	A, B1, B2, B3	100
Photofluorographic Operator	...	B1	75
SOUTH DAKOTA			
Chief, Occupational and Radiological Health Section	BA, MA	A, B1, B2, B4, B5	77
TENNESSEE			
Dir., Industrial Hygiene and Radiological Health Service	MD, MPH	A	50
Asst. Dir., Radiological Health Serv.	BA, MSS	A, B1, B2, B3, B5	100
Radiological Physicist	BA, MA (Phys.)	B1, B2, B3, B4, B5	100
Radiological Chemist	BS (Chem.)	B5	100
X-ray Inspector	BS (Phys.)	B1	16
PHS Assignee	BS, MS	B1, B3	100
TEXAS			
Dir., Occupational Health and Radiation Control	BA (Chem.), MS (SE)	A	33
Chief, Radiation Control Program	BS (Chem.), MS (SE)	A	100
Engineers (2)	BS (Chem. Eng.)	All	100
	BSCE, ME (EHE)	B1, B3	90
Environmental Health Specialists (7)	BS (Biol.)	B1, B3, B5	100
	BS (Biol.), MS	A, B1, B3, B5	100
	BS, MS	A, B1, B3, B5	100
	BA (Zool.)	B1, B3, B5	100
	BA	All	100
	BA (Geol.)	B1, B3, B4, B5	100
	BS (Ind. Ed.)	B1, B3	100
X-ray Technician	...	B1, B5	100
Engineering Assistant	BS, MS (EHE)	B3	100
UTAH			
Chief, Radiation and Occupational Health Section	BS (Chem.)	A, B1, B2, B5	50
Chemist	BS (Chem.)	A, B2	100

*See footnotes at beginning of table.

Appendix B - (Continued)

Title or Specialty	Degree(s)	Area of Performance*	Percent of Total Time
UTAH (cont)			
Sanitarian	...	B2	15
VERMONT			
Dir., Div. of Industrial Hygiene	BS (Chem.)	A	50
Industrial Hygiene Chemist	BS, MS (Chem.)	B2	30
Industrial Hygienist	...	B1, B2	100
PHS Assignee	BS	A, B1, B2, B3, B4	100
VIRGINIA			
Dir., Bureau of Industrial Hygiene	BSChE	A	15
Industrial Hygienist	BS (Chem.)	A, B2	25
Radiological Health Supervisor	BSCE, MPH	A, B1, B2, B3, B4	100
Radiological Chemist	BA (Chem.)	A, B2	100
Radiological Health Specialists (3)	BA	A, B1, B2	100
	BS (Biol.)	A, B1, B4	100
	MA (Math.)	B1, B2	25
WASHINGTON			
Head, Radiation Control Section	BS (Elec. Eng.)	All	100
Radiation Control Specialists (3)	BS	B1, B3	100
	BS (Hlth. Phys.)	B1, B3, B4	100
	BA, BS (Chem.)	31	100
Air Quality Engineer	BSCE	B2	60
Chemist	BS (Biol.)	B2	100
WEST VIRGINIA			
Dir., Bureau of Industrial Hygiene	BS (Chem.)	A	60
Industrial Hygienist	BS (Chem.)	B2, B3, B5	20
Radiological Health Specialists (2)	BS (Biol.)	A, B1, B4, B5	100
	BS (Biol.)	B1, B2, B3, B4, B5	100
WISCONSIN			
Chief, Radiation Protection Division	PhD (Chem.)	A, B1, B2, B4, B5	100
Radiation Consultants (3)	BS	B1, B5	100
Chemist	BS (Chem.)	B2	100
PHS Assignee	MS	B1, B2	100

*See footnotes at beginning of table.

Appendix B - (Continued)

Title or Specialty	Degree(s)	Area of Performance	Percent of Total Time
WYOMING			
Dir., Div. of Industrial Hygiene	MS (Eng.)	A, B1, B2, B3	30
Chemist	BS (Chem.)	A, B1, B2, B5	90
PUERTO RICO			
Dir., Environmental Health Program	MD, MPH	A	30
Dir., Radiological Health Program	BS (Math.) MS (Hlth. Phys.)	All	100
Radiation Protection Specialists (4)	BS (Math.)	A, B1, B3, B4, B5	100
	BS (Math.)	A, B1, B3, B4, B5	100
	BS (Phys.)	A, B1, B3, B4, B5	100
	BS (Biol.)	A, B1, B3, B4, B5	100
Radiochemist	BS (Chem.)	A, B2, B5	100

*See footnotes at beginning of table.

APPENDIX C

DEFINITIONS

Agreement materials - By-product, source, and special nuclear materials under the jurisdiction of an Agreement State.

Agreement State - A State which has entered into an agreement with the Atomic Energy Commission in which certain of the Commission's responsibility is transferred to the State under the terms of Section 274 of the Atomic Energy Act of 1954.

Combination - Participation in a radiological health program in which both voluntary and regulatory programs are utilized.

Compliance - A state or condition conforming to pertinent recommendations or standards whether or not these standards or recommendations are set up by law or by permissive custom.

Comprehensive Regulations - Health codes similar to, or comparable with, those recommended by the Council of State Governments for the control of radiation sources.

Inspection - A critical observation or examination of the source of ionizing radiation and/or its use and/or its environs to determine compliance.

Man Equivalence - The fractional part, or percent, of a total man-year devoted to activities in radiological health. For example, four full-time people spending 25 percent of their working time in radiological health will be counted as the equivalent of one full-time worker.

Particle Accelerator - A device capable of imparting sufficient kinetic energy to charged particles to produce nuclear reactions.

Personnel

Full-time - Employed on a full-time basis and spending all of their working time in radiological health.

Part-time - Employees who devote a part of an average work day to radiological health. They may be employed by the health agency on either full- or part-time basis.

Program Administrators - These personnel, who may be health commissioners, bureau or division chiefs, spend less than 50 percent of their time in radiological health and are responsible for overall planning or administration of several programs in addition to radiological health.

Personnel (cont)

Radiological Health Directors - These employees spend at least 50 percent of their time in radiological health activities; have moderate to wide experience in public health programming; usually have a physical science, biological or engineering degree; may administer total radiological health program.

Radiological Health Specialists - These employees spend at least 50 percent of their time in radiological health activities; have bachelor's or graduate degree in engineering, biological, or physical sciences; may direct one or more program areas. In some cases, personnel who have had years of public health experience in responsible positions, but do not have college degrees, are classified as specialists.

Radiological Health Technicians - Employees in this category spend at least 50 percent of their time in radiological health activities; have a high school degree; may have college or technical courses.

Supporting Personnel - Professional or semiprofessional specialists who spend less than 50 percent of their time in radiological health and are primarily responsible for certain areas of radiological health activities.

Region and Geographic Locations - The following is the geographic grouping of States used by the Bureau of the Census and many other agencies:

Region	State
Northeast	Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania
North Central	Michigan, Ohio, Illinois, Indiana, Wisconsin, Minnesota, Iowa, Missouri, North Dakota, South Dakota, Nebraska, Kansas
South	Delaware, Maryland, District of Columbia, Virginia, West Virginia, North Carolina, South Carolina, Georgia, Florida, Kentucky, Tennessee, Alabama, Mississippi, Arkansas, Louisiana, Oklahoma, Texas, Puerto Rico, Virgin Islands
West	Montana, Idaho, Wyoming, Colorado, New Mexico, Arizona, Utah, Nevada, Washington, Oregon, California, Alaska, Hawaii

Registration - The recording of the existence and/or location of a radiation-producing source under a system of records that identifies the source and is maintained by an appropriate governing body.

Regulatory - Participation in any aspect of a radiological health program in which the power of free choice has been removed by legal authority.

Voluntary - Participation in any aspect of a radiological health program in which the parties involved exercise the power of free choice.

X-ray Machine - Piece of equipment containing one or more X-ray tubes and the necessary appurtenances.

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